Bachelor of Science in Geology

Why study geology?

In Geology you get to apply techniques and knowledge from chemistry, physics, biology and math to answer important questions about Earth processes, history and future. Geologists are in demand to evaluate geologic hazards, evaluate natural resources, and understand the environment including water quality and climate change.

The B.S. program (http://geo.ku.edu/overview/) provides intensive training in geology and other sciences. B.S. majors may emphasize traditional geology, environmental geology (with a specialized track in hydrogeology), engineering geology, geophysics, or earth and space science licensure. The hydrogeology track, the engineering geology option, and the geophysics option combine basic training in geology with training in mathematics, engineering, physics, and geophysics. The environmental geology option combines training in geology with many different sciences.

Undergraduate Admission

Admission to KU

All students applying for admission must send high school and college transcripts to the Office of Admissions. Prospective first-year students should be aware that KU has qualified admission requirements that all new first-year students must meet to be admitted. Consult the Office of Admissions (http://admissions.ku.edu/) for application deadlines and specific admission requirements.

Visit the International Support Services (http://www.iss.ku.edu/) for information about international admissions.

Students considering transferring to KU may see how their college-level course work will transfer on the Office of Admissions (http://credittransfer.ku.edu/) website.

Geology Programs

The B.S. program provides intensive training in geology and other sciences. B.S. majors may emphasize traditional geology, environmental geology (with a specialized track in hydrogeology), engineering geology, geophysics, or earth and space science licensure. The hydrogeology track, the engineering geology option, and the geophysics option combine basic training in geology with training in mathematics, engineering, physics, and geophysics. The environmental geology option combines training in geology with many different sciences.

Degree requirements may be altered to suit particular needs of a student upon petition to the undergraduate studies committee and in consultation with a geology faculty advisor. Special consideration is given to students with strong backgrounds in supporting sciences and students with superior records who decide to major in geology late in their programs.

First- and Second-Year Preparation

Students interested in geology, especially in the B.S. degree, should see a department advisor as soon as possible. They should enroll in mathematics, chemistry, and English in addition to Introduction to Geology and electives. Students should take GEOL 360 as soon as possible.

Advising

Developing a strong relationship with a faculty advisor helps students get the most out of their educational programs in the shortest time. Most courses for majors are offered in only one semester each year. Advisors can guide the student through complexities of the curriculum or into a specialized program.

Requirements for the B.S. Degree

The B.S. program provides intensive training in geology and other sciences. B.S. majors may emphasize traditional geology, environmental geology (with a specialized track in hydrogeology), engineering geology, geophysics, or earth and space science licensure. The hydrogeology track, the engineering geology option, and the geophysics option combine basic training in geology with training in mathematics, engineering, physics, and geophysics. The environmental geology option combines training in geology with many different sciences.

Degree requirements may be altered to suit particular needs of a student upon petition to the undergraduate studies committee and in consultation with a geology faculty advisor. Special consideration is given to students with strong backgrounds in supporting sciences and students with superior records who decide to major in geology late in their programs.

General Geology Option

Written Communication - Core Skill and Critical Inquiry.

Code	Title	Hours
Composition		
Satisfied by one of the following. Requirement must be completed during initial term of admission at KU.		
ENGL 101	Composition	3
ACT English score of 27 or above or SAT English score of 600 or above		
AP English Literature & Composition score of 3 or above		
Equivalent transfer course		
Critical Reading and Writing		
Satisfied by one of the following. Requirement must be completed during initial term of admission at KU.		
ENGL 102	Critical Reading and Writing	3
or ENGL 105	Honors Introduction to English	
AP English Literature & Composition score of 4 or above		
Equivalent transfer course		
Sophomore Reading and Writing II		
Satisfied by one of the following:		
ENGL 203	Topics in Reading and Writing: _____	3
or ENGL 205	Freshman-Sophomore Honors Proseminar: _____	
ENGL 209	Introduction to Fiction	3
ENGL 210	Introduction to Poetry	3
ENGL 211	Introduction to the Drama	3
ENGL 362	Foundations of Technical Writing	3

AP English Literature & Composition score of 5 or above	
Equivalent	

Communications.

Code	Title	Hours
Satisfied by:		
COMS 130	Speaker-Audience Communication	3

Humanities - Understanding the Human Condition. Satisfied by completing 2 courses (requirement code H). Approved courses may be searched for availability through the Kyou portal.

Social and Behavioral Sciences - Understanding Society and Behavior. Satisfied by completing 2 courses (requirement code S). Approved courses may be searched for availability through the Kyou portal. An introductory course in economics is recommended.

Code	Title	Hours
Geology Prerequisite or Co-requisite Knowledge		
Majors must complete courses as specified in each of the following areas. Majors are advised to take honors courses when eligible. These hours do not contribute to the minimum number of hours required for the major.		
Calculus I. Satisfied by:		
MATH 125	Calculus I (Prerequisite: MATH 104; or MATH 103; or three years of college preparatory mathematics including trigonometry and a score of 28 or higher on ACT mathematics or 640 or higher on the SAT; or a qualifying score on the mathematics placement test.)	4
Calculus II. Satisfied by:		
MATH 126	Calculus II	4
Chemistry. Satisfied by:		
CHEM 130 & CHEM 135	General Chemistry I and General Chemistry II	10
Physics. Satisfied by:		
PHSX 211 & PHSX 216	General Physics I and General Physics I Laboratory	5
PHSX 212 & PHSX 236	General Physics II and General Physics II Laboratory	4
Biology. Satisfied by BIOL:		
BIOL 152	Principles of Organismal Biology	3
Information Technology. Satisfied by one of the following:		
EECS 138	Introduction to Computing: _____	3
C&PE 325	Numerical Methods and Statistics for Engineers	3
Geology Core Knowledge and Skills		
Majors must complete the following core courses:		
Introduction to Geology. Satisfied by:		
GEOL 101	The Way The Earth Works	3
Geology Fundamentals Laboratory. Satisfied by:		
GEOL 103	Geology Fundamentals Laboratory	2
Historical Geology. Satisfied by:		
GEOL 304	Historical Geology	3
Mineralogy and Structure of the Earth. Satisfied by:		
GEOL 311	Mineralogy and Structure of the Earth	3
Mineral Structures and Equilibria Laboratory. Satisfied by:		
GEOL 312	Mineral Structures and Equilibria Laboratory	1
Sedimentology and Stratigraphy. Satisfied by:		
GEOL 331	Sedimentology and Stratigraphy	4
Field Investigation. Satisfied by:		
GEOL 360	Field Investigation	2-3
or GEOL 370	Study Abroad in Greece: Natural Environment and Civilizations	
Igneous and Metamorphic Petrology. Satisfied by:		
GEOL 512	Igneous and Metamorphic Petrology	3
Petrology Laboratory. Satisfied by:		
GEOL 513	Petrology Laboratory	1
Introductory Field Geology. Satisfied by:		
GEOL 560	Introductory Field Geology	3
Field Geology. Satisfied by:		
GEOL 561	Field Geology	3
Structural Geology. Satisfied by:		
GEOL 562	Structural Geology	4
Geology Required Electives		**18**
At least one course from each of the three categories listed below: Life; Water & Climate; Rocks. Additional elective credit requirements fulfilled by 500 level and above geology courses, although only one geology course fulfilling KU Core Goal 4 or 5 may count towards these 9 hours. Additionally, 3 hours of GEOL 121, if taken before the student has completed 60 hrs, GEOL 391 or GEOL 399 can also count towards these 9 credit hours.		
Life		
GEOL 316	Geochemistry	
GEOL 521	Paleontology	
GEOL 525	Geobiology: The Coevolution of Life and Rocks	
GEOL 591	Topics in Geology: _____ (Geobiology)	
Rocks		
GEOL 501	Simple Error Analysis with Matlab	
GEOL 502	Linear Algebra for Earth Scientists	
GEOL 503	Numerical Methods in the Earth Sciences	
GEOL 511	Raman Spectroscopy of Crystalline Solids	
GEOL 533	Shales and Other Mudstones	
GEOL 535	Petroleum and Subsurface Geology	
GEOL 536	Geological Log Analysis	
GEOL 537	Petroleum Reservoir Characterization	
GEOL 538	Basin Analysis	
GEOL 539	Sequence Stratigraphy	
GEOL 572	Geophysics	
Water and Climate		
GEOL 552	Introduction to Hydrogeology	
GEOL 554	Contaminants in Groundwater	
GEOL 555	Climate Science	
GEOL 558	Applied Groundwater Modeling	
GEOL 579	Hydrogeophysics	
GEOL 591	Topics in Geology: _____ (Climate: Past, Present and Future)	

Major Hours & Major GPA

While completing all required courses, majors must also meet each of the following hour and grade-point average minimum standards:

Major Hours
Satisfied by 50 hours of major courses.

Major Hours in Residence
Satisfied by a minimum of 15 hours of KU resident credit in the major.

Major Junior/Senior Hours
Satisfied by a minimum of 18 hours from junior/senior courses (300+) in the major.

Major Junior/Senior Graduation GPA
Satisfied by a minimum of a 2.0 KU GPA in junior/senior courses (300+) in the major. GPA calculations include all junior/senior courses in the field of study including F's and repeated courses. See the Semester/Cumulative GPA Calculator (http://clas.ku.edu/undergrad/tools/gpa/).

Engineering Geology Option

Written Communication - Core Skill and Critical Inquiry.

Code	Title	Hours
Composition		
Satisfied by one of the following. Requirement must be completed during initial term of admission at KU.		
ENGL 101	Composition	3
ACT English score of 27 or above or SAT English score of 600 or above		
AP English Literature & Composition score of 3 or above		
Equivalent transfer course		
Critical Reading and Writing		
Satisfied by one of the following. Requirement must be completed within the first academic year at KU.		
ENGL 102	Critical Reading and Writing	3
or ENGL 105	Honors Introduction to English	
AP English Literature & Composition score of 4 or above		
Equivalent transfer course		
Sophomore Reading and Writing II		
Satisfied by one of the following:		
ENGL 362	Foundations of Technical Writing	3
AP English Literature & Composition score of 5 or above		
Equivalent		

Communications.

Code	Title	Hours
Satisfied by:		
COMS 130	Speaker-Audience Communication	3

Humanities - Understanding the Human Condition. Satisfied by completing 2 courses (requirement code H). Approved courses may be searched for availability through the Kyou portal.

Social and Behavioral Sciences - Understanding Society and Behavior. Satisfied by completing 2 courses (requirement code S). Approved courses may be searched for availability through the Kyou portal. An introductory course in economics is recommended.

Code	Title	Hours
Geology Prerequisite or Co-requisite Knowledge		
Majors must complete courses as specified in each of the following areas. Majors are advised to take honors courses when eligible. These hours do not contribute to the minimum number of hours required for the major.		
Mathematics. Satisfied by:		
MATH 125	Calculus I	4
MATH 126	Calculus II	4
MATH 220	Applied Differential Equations	3
MATH 290	Elementary Linear Algebra	2
Chemistry. Satisfied by:		
CHEM 130 & CHEM 135	General Chemistry I and General Chemistry II	10
Physics. Satisfied by:		
PHSX 211 & PHSX 216	General Physics I and General Physics I Laboratory	5
PHSX 212 & PHSX 236	General Physics II and General Physics II Laboratory	4
Information Technology. Satisfied by one of the following:		
EECS 138	Introduction to Computing: _____	3
C&PE 325	Numerical Methods and Statistics for Engineers	3
Statics. Satisfied by:		
CE 201	Statics	2
Dynamics. Satisfied by:		
CE 250	Dynamics	3
Fluid Mechanics. Satisfied by:		
CE 330	Fluid Mechanics	3
Hydrology. Satisfied by:		
CE 455	Hydrology	3
Soil Mechanics. Satisfied by:		
CE 487	Soil Mechanics	4
Geology Core Knowledge and Skills		
Majors must complete the following core courses:		
Introduction to Geology. Satisfied by one of the following:		
GEOL 101	The Way The Earth Works	3
GEOL 103	Geology Fundamentals Laboratory	2
GEOL 304	Historical Geology	3
Mineralogy and Structure of the Earth. Satisfied by:		
GEOL 311	Mineralogy and Structure of the Earth	3
Mineral Structures and Equilibria Laboratory. Satisfied by:		
GEOL 312	Mineral Structures and Equilibria Laboratory	1
Sedimentology and Stratigraphy. Satisfied by:		
GEOL 331	Sedimentology and Stratigraphy	4
Environmental Geology. Satisfied by:		
GEOL 351	Environmental Geology	3
Field Investigation. Satisfied by:		
GEOL 360	Field Investigation	2
Igneous and Metamorphic Petrology. Satisfied by:		
GEOL 512	Igneous and Metamorphic Petrology	3
Petrology Laboratory. Satisfied by:		

GEOL 513	Petrology Laboratory	1
Geomorphology. Satisfied by:		
GEOL 541	Geomorphology	4
Introductory Field Geology. Satisfied by:		
GEOL 560	Introductory Field Geology	3
Field Geology. Satisfied by:		
GEOL 561	Field Geology	3
Structural Geology. Satisfied by:		
GEOL 562	Structural Geology	4
Geophysics or Geodynamics and Plate Tectonics. Satisfied by one of the following:		
GEOL 572	Geophysics	3
Geology or Civil Engineering Required Electives		
Majors must complete three additional geology or civil engineering courses, at least two of which must be from the following:		
GEOL 521	Paleontology	3
GEOL 535	Petroleum and Subsurface Geology	4
GEOL 715	Geochemistry	3
GEOL 751	Physical Hydrogeology	3
CE 770	Concepts of Environmental Chemistry	3
CE 771	Environmental Engineering Laboratory	3
Electives may include an upper-division course in statistics:		
MATH 365	Elementary Statistics	3
or BIOL 370	Introduction to Biostatistics	

Major Hours & Major GPA

While completing all required courses, majors must also meet each of the following hour and grade-point average minimum standards:

Major Hours
Satisfied by 45 hours of major courses.

Major Hours in Residence
Satisfied by a minimum of 15 hours of KU resident credit in the major.

Major Junior/Senior Hours
Satisfied by a minimum of 18 hours from junior/senior courses (300+) in the major.

Major Junior/Senior Graduation GPA
Satisfied by a minimum of a 2.0 KU GPA in junior/senior courses (300+) in the major. GPA calculations include all junior/senior courses in the field of study including F's and repeated courses. See the Semester/Cumulative GPA Calculator (http://clas.ku.edu/undergrad/tools/gpa/).

Environmental Geology Option

Written Communication - Core Skill and Critical Inquiry.

Code	Title	Hours
Composition		
Satisfied by one of the following. Requirement must be completed during initial term of admission at KU.		
ENGL 101	Composition	3
ACT English score of 27 or above or SAT English score of 600 or above		
AP English Literature & Composition score of 3 or above		
Equivalent transfer course		
Critical Reading and Writing		
Satisfied by one of the following. Requirement must be completed within the first academic year at KU.		
ENGL 102	Critical Reading and Writing	3
or ENGL 105	Honors Introduction to English	
AP English Literature & Composition score of 4 or above		
Equivalent transfer course		
Sophomore Reading and Writing II		
Satisfied by one of the following:		
ENGL 203	Topics in Reading and Writing: _____	3
or ENGL 205	Freshman-Sophomore Honors Proseminar: _____	
ENGL 209	Introduction to Fiction	3
ENGL 210	Introduction to Poetry	3
ENGL 211	Introduction to the Drama	3
ENGL 362	Foundations of Technical Writing	3
AP English Literature & Composition score of 5 or above		
Equivalent		

Communications.

Code	Title	Hours
Satisfied by:		
COMS 130	Speaker-Audience Communication	3

Humanities - Understanding the Human Condition. Satisfied by completing 2 courses (requirement code H). Approved courses may be searched for availability through the Kyou portal.

Social and Behavioral Sciences - Understanding Society and Behavior. Satisfied by completing 2 courses (requirement code S). Approved courses may be searched for availability through the Kyou portal. An introductory course in economics is recommended.

Code	Title	Hours
Geology Prerequisite or Co-requisite Knowledge		
Majors must complete courses as specified in each of the following areas. Majors are advised to take honors courses when eligible. These hours do not contribute to the minimum number of hours required for the major.		
Calculus I. Satisfied by:		
MATH 125	Calculus I	4
Calculus II. Satisfied by:		
MATH 126	Calculus II	4
Chemistry. Satisfied by:		
CHEM 130 & CHEM 135	General Chemistry I and General Chemistry II	10
Physics. Satisfied by:		
Select one of the following:		
PHSX 211 & PHSX 216	General Physics I and General Physics I Laboratory	5
PHSX 212 & PHSX 236	General Physics II and General Physics II Laboratory (recommended)	4
PHSX 114 & PHSX 115	College Physics I and College Physics II	2-8
Biology. Satisfied by:		

BIOL 150 & BIOL 152	Principles of Molecular and Cellular Biology and Principles of Organismal Biology	6
Information Technology. Satisfied by one of the following:		
EECS 138	Introduction to Computing: _____	3
C&PE 325	Numerical Methods and Statistics for Engineers	3
Geology Core Knowledge and Skills		
Majors must complete the following core courses:		
Introduction to Geology. Satisfied by:		
GEOL 101	The Way The Earth Works	3
Geology Fundamentals Laboratory. Satisfied by:		
GEOL 103	Geology Fundamentals Laboratory	2
Historical Geology. Satisfied by:		
GEOL 304	Historical Geology	3
Mineralogy and Structure of the Earth. Satisfied by:		
GEOL 311	Mineralogy and Structure of the Earth	3
Sedimentology and Stratigraphy. Satisfied by:		
GEOL 331	Sedimentology and Stratigraphy	4
Environmental Geology. Satisfied by:		
GEOL 351	Environmental Geology	3
Field Investigation. Satisfied by:		
GEOL 360	Field Investigation	2
Paleontology. Satisfied by:		
GEOL 521	Paleontology	3
Geomorphology. Satisfied by:		
GEOL 541	Geomorphology	4
Introduction to Hydrogeology. Satisfied by:		
GEOL 552	Introduction to Hydrogeology	3
Introductory Field Geology. Satisfied by:		
GEOL 560	Introductory Field Geology	3
Structural Geology. Satisfied by:		
GEOL 562	Structural Geology	4
Geophysics. Satisfied by:		
GEOL 572	Geophysics	3
Geology Required Electives		
Majors must complete additional courses to total at least nine hours numbered 500 or above. The following are recommended:		9
GEOL 391	Special Studies in Geology	1-6
GEOL 535	Petroleum and Subsurface Geology	4
GEOL 715	Geochemistry	3
GEOL 751	Physical Hydrogeology	3
CE 770 & CE 771	Concepts of Environmental Chemistry and Environmental Engineering Laboratory	6
GEOG 535	Soil Geography	4
GEOG 558	Spatial Data Analysis	4
GEOL 753	Chemical and Microbial Hydrogeology	3
BIOL 400	Fundamentals of Microbiology	3

Environmental Hydrogeology Track

Besides the general program above, a specialized track in hydrogeology satisfies degree requirements. In addition to College, supporting science, and geology courses, the environmental hydrogeology track requires the following mathematics and civil engineering/physics courses:

Code	Title	Hours
MATH 220	Applied Differential Equations	3
MATH 290	Elementary Linear Algebra	2
CE 330	Fluid Mechanics	3

In addition, Technical Electives (9 hours). These normally are chosen from courses numbered 500 or above in geology, physics, mathematics, chemistry, engineering or computer science. Courses numbered below 500 must be approved by a geology advisor.

Major Hours & Major GPA

While completing all required courses, majors must also meet each of the following hour and grade-point average minimum standards:

Major Hours
Satisfied by 49 hours of major courses.

Major Hours in Residence
Satisfied by a minimum of 15 hours of KU resident credit in the major.

Major Junior/Senior Hours
Satisfied by a minimum of 45 hours from junior/senior courses (300+) in the major.

Major Junior/Senior Graduation GPA
Satisfied by a minimum of a 2.0 KU GPA in junior/senior courses (300+) in the major. GPA calculations include all junior/senior courses in the field of study including F's and repeated courses. See the Semester/Cumulative GPA Calculator (http://clas.ku.edu/undergrad/tools/gpa/).

Geophysics Option

Written Communication - Core Skill and Critical Inquiry.

Code	Title	Hours
Composition		
Satisfied by one of the following. Requirement must be completed during initial term of admission at KU.		
ENGL 101	Composition	3
ACT English score of 27 or above or SAT English score of 600 or above		
AP English Literature & Composition score of 3 or above		
Equivalent transfer course		
Critical Reading and Writing		
Satisfied by one of the following. Requirement must be completed during initial term of admission at KU.		
ENGL 102	Critical Reading and Writing	3
or ENGL 105	Honors Introduction to English	
AP English Literature & Composition score of 4 or above		
Equivalent transfer course		
Sophomore Reading and Writing II		
Satisfied by one of the following:		
ENGL 203	Topics in Reading and Writing: _____	3
or ENGL 205	Freshman-Sophomore Honors Proseminar: _____	
ENGL 209	Introduction to Fiction	3
ENGL 210	Introduction to Poetry	3
ENGL 211	Introduction to the Drama	3
ENGL 362	Foundations of Technical Writing	3

AP English Literature & Composition score of 5 or above		
Equivalent		

Humanities - Understanding the Human Condition. Satisfied by completing 2 courses (requirement code H). Approved courses may be searched for availability through the Kyou portal.

Social and Behavioral Sciences - Understanding Society and Behavior. Satisfied by completing 2 courses (requirement code S). Approved courses may be searched for availability through the Kyou portal. An introductory course in economics is recommended.

Code	Title	Hours
Geology Prerequisite or Co-requisite Knowledge		
Majors must complete courses as specified in each of the following areas. Majors are advised to take honors courses when eligible. These hours do not contribute to the minimum number of hours required for the major.		
Calculus I. Satisfied by:		
Calculus II. Satisfied by:		
Vector Calculus and Elementary Linear Algebra. Satisfied by:		
MATH 125	Calculus I	4
MATH 126	Calculus II	4
MATH 127	Calculus III	4
MATH 290	Elementary Linear Algebra	2
Elementary Differential Equations. Satisfied by:		
MATH 320	Elementary Differential Equations	3
Chemistry. Satisfied by:		
CHEM 130 & CHEM 135	General Chemistry I and General Chemistry II	10
Physics. Satisfied by:		
PHSX 211 & PHSX 216	General Physics I and General Physics I Laboratory	5
PHSX 212 & PHSX 236	General Physics II and General Physics II Laboratory	4
PHSX 313	General Physics III	3
PHSX 521	Mechanics I	3
PHSX 531	Electricity and Magnetism	3
or EECS 220	Electromagnetics I	
Intro to Computing. Satisfied by one of the following:		
EECS 138	Introduction to Computing: _____	3
Demonstrate equivalent programming skills		
Geology Core Knowledge and Skills		
Majors must complete the following core courses:		
Introduction to Geology. Satisfied by:		
GEOL 101	The Way The Earth Works	3
Geology Fundamentals Laboratory. Satisfied by:		
GEOL 103	Geology Fundamentals Laboratory	2
Historical Geology. Satisfied by:		
GEOL 304	Historical Geology	3
Mineralogy and Structure of the Earth. Satisfied by:		
GEOL 311	Mineralogy and Structure of the Earth	3
Sedimentology and Stratigraphy. Satisfied by:		
GEOL 331	Sedimentology and Stratigraphy	4
Field Investigation. Satisfied by:		
GEOL 360	Field Investigation	2
Igneous and Metamorphic Petrology. Satisfied by:		
GEOL 512	Igneous and Metamorphic Petrology	3
Introductory Field Geology. Satisfied by:		
GEOL 560	Introductory Field Geology	3
Structural Geology. Satisfied by:		
GEOL 562	Structural Geology	4
Geophysics. Satisfied by one of the following:		
GEOL 572	Geophysics	3
Additional Geology Courses		
Geophysics elective 500 and above (at least 9 hours)		9
GEOL 575	Seismic Exploration	
GEOL 578	Seismic Data Analysis and Interpretation	
Technical Required Electives		**6**
At least 6 hours from the list below or other 500 and above Geology, Physics, Mathematics, Engineering, or Computer Science.		
GEOL 535	Petroleum and Subsurface Geology	
GEOL 536	Geological Log Analysis	
GEOL 552	Introduction to Hydrogeology	
MATH 581	Numerical Methods	

Major Hours & Major GPA

While completing all required courses, majors must also meet each of the following hour and grade-point average minimum standards:

Major Hours
Satisfied by 45 hours of major courses.

Major Hours in Residence
Satisfied by a minimum of 15 hours of KU resident credit in the major.

Major Junior/Senior Hours
Satisfied by a minimum of 12 hours from junior/senior courses (300+) in the major.

Major Junior/Senior Graduation GPA
Satisfied by a minimum of a 2.0 KU GPA in junior/senior courses (300+) in the major. GPA calculations include all junior/senior courses in the field of study including F's and repeated courses. See the Semester/Cumulative GPA Calculator (http://clas.ku.edu/undergrad/tools/gpa/).

Earth and Space Science Licensure Option

This program fulfills the requirements for a Bachelor of Science degree in geology. The program also meets course requirements necessary to gain state licensure eligibility in earth and space science to become a secondary teacher in Kansas, but completion of the program does not guarantee the student's licensure. This list is a guideline. Contact the geology department for further information about meeting degree and additional licensure requirements. You may also contact the UKanTeach Office for information about similar tracks resulting in eligibility for licensure in this and other science and mathematics fields.

Written Communication - Core Skill and Critical Inquiry.

Code	Title	Hours
Composition		
Satisfied by one of the following. Requirement must be completed during initial term of admission at KU.		
ENGL 101	Composition	3
ACT English score of 27 or above or SAT English score of 600 or above		
AP English Literature & Composition score of 3 or above		
Equivalent transfer course		
Critical Reading and Writing		
Satisfied by one of the following. Requirement must be completed within the first academic year at KU.		
ENGL 102	Critical Reading and Writing	3
or ENGL 105	Honors Introduction to English	
AP English Literature & Composition score of 4 or above		
Equivalent transfer course		
Sophomore Reading and Writing II		
Satisfied by one of the following:		
ENGL 203	Topics in Reading and Writing: _____	3
or ENGL 205	Freshman-Sophomore Honors Proseminar: _____	
ENGL 209	Introduction to Fiction	3
ENGL 210	Introduction to Poetry	3
ENGL 211	Introduction to the Drama	3
ENGL 362	Foundations of Technical Writing	3
AP English Literature & Composition score of 5 or above		
Equivalent		

Communications.

Code	Title	Hours
Satisfied by:		
COMS 130	Speaker-Audience Communication	3

Humanities - Understanding the Human Condition. Satisfied by completing 2 courses (requirement code H). Approved courses may be searched for availability through the Kyou portal.

Social and Behavioral Sciences - Understanding Society and Behavior. Satisfied by completing 2 courses (requirement code S). Approved courses may be searched for availability through the Kyou portal. An introductory course in economics is recommended.

Code	Title	Hours
Geology Prerequisite or Co-requisite Knowledge		
Majors must complete courses as specified in each of the following areas. Majors are advised to take honors courses when eligible. These hours do not contribute to the minimum number of hours required for the major.		
Calculus I. Satisfied by:		
MATH 125	Calculus I	4
Calculus II. Satisfied by:		
MATH 126	Calculus II	4
Chemistry. Satisfied by:		
CHEM 130 & CHEM 135	General Chemistry I and General Chemistry II	10
Physics. Satisfied by:		
PHSX 211 & PHSX 216	General Physics I and General Physics I Laboratory	5
PHSX 212 & PHSX 236	General Physics II and General Physics II Laboratory	4
Biology. Satisfied by:		
BIOL 152	Principles of Organismal Biology	3
or BIOL 153	Principles of Organismal Biology, Honors	
Geology Core Knowledge and Skills		
Majors must complete the following core courses:		
Introduction to Geology. Satisfied by:		
GEOL 101	The Way The Earth Works	3
Geology Fundamentals Laboratory. Satisfied by:		
GEOL 103	Geology Fundamentals Laboratory	2
Historical Geology. Satisfied by:		
GEOL 304	Historical Geology	3
Mineralogy and Structure of the Earth. Satisfied by:		
GEOL 311	Mineralogy and Structure of the Earth	3
Sedimentology and Stratigraphy. Satisfied by:		
GEOL 331	Sedimentology and Stratigraphy	4
Field Investigation. Satisfied by:		
GEOL 360	Field Investigation	2
Paleontology. Satisfied by:		
GEOL 521 & GEOL 523	Paleontology and Paleontology Laboratory	4
Introduction to Hydrogeology. Satisfied by:		
GEOL 552	Introduction to Hydrogeology	3
Introductory Field Geology. Satisfied by:		
GEOL 560	Introductory Field Geology	3
Structural Geology. Satisfied by:		
GEOL 562	Structural Geology	4
Space Science Core Knowledge and Skills		
Majors must complete the following core courses:		
Introductory Meteorology. Satisfied by:		
ATMO 105	Introductory Meteorology	5
Contemporary Astronomy. Satisfied by:		
ASTR 191	Contemporary Astronomy	3
Earth and Space Required Electives		
Majors must complete one of the areas below:		
Geology Focus. Satisfied by 4 hours in a geology course numbered 300 or above.		
aboveAstronomy Focus. Satisfied by 4 hours in astronomy courses numbered 300 or above. This can include three hours of GEOL 121 (if taken before the completion of 60 hours), or ASTR 390 or GEOL 399.		
Research Methods		
Satisfied by:		
CHEM 598	Research Methods	3
Professional Development Course Work		
A minimum grade of C is required in all courses.		
Liberal Arts and Sciences. Satisfied by:		

LA&S 290	Approaches to Teaching Science and Mathematics I	1
LA&S 291	Approaches to Teaching Science and Mathematics II	1
Curriculum and Teaching (19 hours). Satisfied by:		
C&T 448 Reading and Writing across the Curriculum and 16 hours of courses approved by UKanTeach in curriculum and teaching. These should include courses such as Classroom Interactions (3), Knowing and Learning (3), Project Based Instruction (3), Student Teaching (6), and Special Topics Seminar (1).		

Major Hours & Major GPA

While completing all required courses, majors must also meet each of the following hour and grade-point average minimum standards:

Major Hours
Satisfied by 46 hours of major courses.

Major Hours in Residence
Satisfied by a minimum of 15 hours of KU resident credit in the major.

Major Junior/Senior Hours
Satisfied by a minimum of 34 hours from junior/senior courses (300+) in the major.

Major Junior/Senior Graduation GPA
Satisfied by a minimum of a 2.0 KU GPA in junior/senior courses (300+) in the major. GPA calculations include all junior/senior courses in the field of study including F's and repeated courses. See the Semester/Cumulative GPA Calculator (http://clas.ku.edu/undergrad/tools/gpa/).

Departmental Honors

Pursuit of departmental honors in Geology is by invitation from the Department of Geology honors coordinator.
Requirements include:
3.50 or higher KU geology-courses GPA at graduation.
Completion of at least 2 credit hours of GEOL 399.

Completion and successful defense of an honor's thesis.
Additional requirements and more information may be obtained from the Department of Geology honors coordinator and web site.