Bachelor of Science in Geography

Why study geography?
A much more specialized degree, the Bachelor of Science offers concentrated specializations in one of two aspects of Geography: physical geography or geographic information science (GIS). The BS has fewer general education requirements and require solid backgrounds in mathematics and basic science.

There are two B.S. degree options:

Physical Geography Option
Students prepare for a career in environmental assessment and problem solving. Basic requirements include preparation in chemistry, biology, physics and mathematics. Advanced course work includes the study of the processes that affect the physical environment (soils, vegetation, climate and geomorphology), and techniques for performing statistical and computational analysis of these processes (statistics, GIS and remote sensing).

Geographical Information and Analysis Option
Students prepare for a career in the area of geographic information science and problem solving using a variety of spatial analysis techniques. Basic requirements include preparation in mathematics, science and computer science. Advanced course work includes work in cartography, GIS, remote sensing, spatial statistics, spatial analysis and data presentation and visualization. In addition, students are expected to take some coursework in one of the other areas of geography (physical, human, and regional).

Beyond the basic requirements listed under each option, both Geography B.S. degrees have a common set of general education requirements, including courses in English, mathematics, communications, humanities, social sciences and a history or philosophy of science course. Some courses are shared by the two options; however, different course selection menus apply for the remaining requirements.

Undergraduate Admission

Admission to KU
All students applying for admission must send high school and college transcripts to the Office of Admissions. Unless they are college transfer students with at least 24 hours of credit, prospective students must send ACT or SAT scores 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.

Admission to the College of Liberal Arts and Sciences
Admission to the College is a different process from admission to a major field. Some CLAS departments have admission requirements. See individual department/program sections for departmental admission requirements.

Geography Programs
The B.A., B.G.S., and B.S. in geography provide general liberal arts enrichment, preparation for graduate work, and training for careers in geography and related fields. Geography may be combined with another program as a double major, or courses in another area may simply be added to those in geography.

First- and Second-Year Preparation
Students should begin the major by meeting the core requirements and preparing for major courses.

Requirements for the B.S. Degree

Geography B.S. General Education Requirements

Written Communication – Core Skill and Critical Inquiry.

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ENGL 101</td>
<td>Composition</td>
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<tr>
<td>ACT English score of 27 or above or SAT English score of 600 or above</td>
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<tr>
<td>AP English Literature &amp; Composition score of 3 or above</td>
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<tr>
<td>Equivalent transfer course</td>
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Critical Reading and Writing
Satisfied by one of the following. Requirement must be completed during initial term of admission at KU.

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<tr>
<th>Code</th>
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<th>Hours</th>
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<tbody>
<tr>
<td>ENGL 102</td>
<td>Critical Reading and Writing</td>
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<tr>
<td>or ENGL 109Honors Introduction to English</td>
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<td></td>
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<tr>
<td>AP English Literature &amp; Composition score of 4 or above</td>
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<td>Equivalent transfer course</td>
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Sophomore Reading and Writing II
Satisfied by one of the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ENGL 203</td>
<td>Topics in Reading and Writing: _____</td>
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<tr>
<td>or ENGL 205Freshman-Sophomore Honors Proseminar: _____</td>
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<tr>
<td>ENGL 209</td>
<td>Introduction to Fiction</td>
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<tr>
<td>ENGL 210</td>
<td>Introduction to Poetry</td>
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<tr>
<td>ENGL 211</td>
<td>Introduction to the Drama</td>
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<tr>
<td>ENGL 362</td>
<td>Foundations of Technical Writing (recommended)</td>
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<tr>
<td>AP English Literature &amp; Composition score of 5 or above</td>
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<tr>
<td>Equivalent</td>
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Communications. Satisfied by COMS 130 (COMS 230, PHIL 148, PHIL 310 or exemption).

History or philosophy of science.
Bachelor of Science in Geography

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>HIST 103</td>
<td>Environment and History</td>
<td>3</td>
</tr>
<tr>
<td>HIST 136</td>
<td>Early Science to 1700</td>
<td></td>
</tr>
<tr>
<td>HIST 305</td>
<td>The Scientific Revolution</td>
<td></td>
</tr>
<tr>
<td>HIST 306</td>
<td>Science and Western Culture</td>
<td></td>
</tr>
<tr>
<td>HIST 347</td>
<td>Environmental History of North America</td>
<td></td>
</tr>
<tr>
<td>HIST 360</td>
<td>Science and Religion</td>
<td></td>
</tr>
<tr>
<td>HIST 407</td>
<td>History of Science in the United States</td>
<td></td>
</tr>
<tr>
<td>PHIL 370</td>
<td>Moral Issues in Medicine</td>
<td></td>
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<tr>
<td>PHIL 375</td>
<td>Moral Issues in Computer Technology</td>
<td></td>
</tr>
<tr>
<td>PHIL 380</td>
<td>Environmental Ethics</td>
<td></td>
</tr>
<tr>
<td>PHIL 620</td>
<td>Philosophy of Natural Science</td>
<td></td>
</tr>
<tr>
<td>PHIL 622</td>
<td>Philosophy of Social Science</td>
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Select one of the following or consult undergraduate committee for approval of alternatives:

- HIST 103 Environment and History
- HIST 136 Early Science to 1700
- HIST 305 The Scientific Revolution
- HIST 306 Science and Western Culture
- HIST 347 Environmental History of North America
- HIST 360 Science and Religion
- HIST 407 History of Science in the United States
- PHIL 370 Moral Issues in Medicine
- PHIL 375 Moral Issues in Computer Technology
- PHIL 380 Environmental Ethics
- PHIL 620 Philosophy of Natural Science
- PHIL 622 Philosophy of Social Science

**Humanities - Understanding the Human Condition.** Satisfied by completing 2 principal courses in the humanities. Approved courses may be searched for availability through the Kyau portal.

**Social and Behavioral Sciences - Understanding Society and Behavior.** Satisfied by completing 2 principal courses in the social sciences. Approved courses may be searched for availability through the Kyau portal.

**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 44 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).

**Physical Geography Option**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MATH 125</td>
<td>Calculus I. Satisfied by one of the following:</td>
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<tr>
<td>MATH 126</td>
<td>Calculus II. Satisfied by one of the following:</td>
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<tr>
<td>MATH 220 &amp; 320</td>
<td>(MATH 220 and 320 are also recommended)</td>
<td></td>
</tr>
<tr>
<td>PHSX 211 &amp; PHSX 216</td>
<td>General Physics I and General Physics I Laboratory (recommended)</td>
<td>4-5</td>
</tr>
</tbody>
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**Geography Overview Courses**

- Principles of Physical Geography. Satisfied by: GEOG 104 Introduction to Physical Geography
- Introductory Laboratory in Physical Geography. Satisfied by: GEOG 105 Introductory Laboratory in Physical Geography
- One course in Human or Regional Geography

**Core System Courses**

**Climate:**
- GEOG 321 Climate and Climate Change
- GEOG 336 Introduction to Environmental Hydrology and Water Resources
- CE 455 Hydrology

**Hydrology:**
- GEOG 301 Hydrology

**Soil Geography:**
- GEOG 335 Introduction to Soil Geography
- GEOG 535 Soil Geography

**Glaciology:**
- GEOG 332 Glaciers and Landscape

**Biogeography:**
- BIOL 414 Principles of Ecology

**Geoinformatics Courses**

- Methods of Analyzing Geographical Data. Satisfied by: GEOG 316 Methods of Analyzing Geographical Data
- Principles of Geographic Information Systems. Satisfied by: GEOG 358 Introduction to Geographic Information Systems
- One 500-level or above course from GIS Studies. (GEOG 526 Remote Sensing of Environment I recommended)

**Senior Capstone**

Satisfied by the following:
- GEOG 500 Senior Capstone in Geography

**Elective Courses**

Select two or more of the following:
- GEOG 540 Ecoclimatology
- Climate:
- GEOG 521 Microclimatology
Geomorphology:
- GEOG 532 Geoarchaeology
- GEOG 541 Geomorphology

Soil Geography:
- GEOG 538 Soil Chemistry
- GEOG 735 Soil Geomorphology

Other advanced courses in Physical Geography
- Geographical Information and Analysis Option
  - Code | Title | Hours
  - Geography Prerequisite or Co-requisite Knowledge
    - Calculus I. Satisfied by one of the following:
      - MATH 125 Calculus I
      - or MATH 145 Calculus I, Honors
    - Calculus II. Satisfied by one of the following:
      - MATH 126 Calculus II
      - or MATH 146 Calculus II, Honors
    - General Physics I. Satisfied by one of the following:
      - PHSX 211 General Physics I
      - PHSX 114 College Physics I
      - & PHSX 201 and Calculus Supplement to College Physics I
    - General Physics II. Satisfied by one of the following:
      - PHSX 212 General Physics II
      - PHSX 115 College Physics II
      - & PHSX 202 and Calculus Supplement to College Physics II
    - Computing Fundamentals. Satisfied by:
      - GEOG 360 Computer Programming for Mapping and Spatial Analysis
      - or EECS 138 Introduction to Computing: _____
  - Overview Geography Courses
    - Principles of Physical Geography or Scientific Principles of Environmental Studies. Satisfied by one of the following:
      - GEOG 104 Introduction to Physical Geography
      - & GEOG 105 and Introductory Laboratory in Physical Geography
      - GEOG 140 Global Environment I: The Discovery of Environmental Change
    - Maps and Mapping or Computers, Maps, and Geographical Analysis. Satisfied by:
      - GEOG 111 Mapping Our Changing World
      - or GEOG 353 Introduction to Geographic Information Systems
    - Principles of Human Geography. Satisfied by:
      - GEOG 102 People, Place, and Society
      - or GEOG 103 People, Place, and Society, Honors
    - 2 GEOG 300+ courses. One in Physical and one in Human and/or Regional Geography
  - Core Geographic Information Science Courses
    - Six courses, at least one from each category:
      - Cartography and Visualization. Satisfied by:
        - GEOG 311 Introductory Cartography and Geovisualization
        - GEOG 512 Advanced Cartography and Geovisualization
      - Geographical Information Systems. Satisfied by:
        - GEOG 558 Intermediate Geographical Information Systems
    - GEOG 560 GIS Application Programming
    - GEOG 758 Geographic Information Science
    - Remote Sensing. Satisfied by:
      - GEOG 526 Remote Sensing of Environment I
      - GEOG 726 Remote Sensing of Environment II
    - Statistics. Satisfied by:
      - GEOG 316 Methods of Analyzing Geographical Data
      - GEOG 516 Applied Multivariate Analysis in Geography
      - GEOG 716 Advanced Geostatistics
  - Senior Capstone in Geography
    - Satisfied by:
      - GEOG 500 Senior Capstone in Geography
    - Geographic Information Science Electives
    - Two other courses from geographic information science
    - Allied Field
      - Three courses and nine hours minimum in one field (or a minor) (area studies, atmospheric science, biology, computer science, design, environmental studies, engineering, geology, psychology, urban planning).
    - Electives
      - 14-23 credit hours of any university courses.

Geography 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 48 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 (300+) Hours
  - Satisfied by a minimum of 12 hours from junior/senior courses (300+) in the major.
- Major Junior/Senior (300+) 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.

Departmental Honors in Geography

To be accepted as a candidate for honors, an undergraduate major must have completed at least 9 hours of upper-division credit in geography with a grade-point average of 3.5 in all geography courses and of at least 3.25 overall. In addition to outstanding work in geography, the program requires GEOG 499, an independent study course consisting of an honors paper.

The student presents the results of this paper in an oral examination to a committee of at least 2 faculty members, normally from the geography department, chaired by the GEOG 499 supervisor. To graduate with honors, the student must complete the paper and the examination and maintain the 3.5 and 3.25 grade-point averages.