BACHELOR OF SCIENCE: ENVIRONMENTAL SCIENCE

University Requirements

General Education
The UMKC General Education Core (http://catalog.umkc.edu/undergraduate-academic-regulations-information/general-education-requirements) is the university-wide curriculum that all undergraduate students will complete. The 30-credit hour core curriculum includes three course types designated as Anchor, Discourse and Focus and is detailed in the General Education (http://catalog.umkc.edu/undergraduate-academic-regulations-information/general-education-requirements) section of the catalog.

Constitution Course
Every undergraduate student must take a course covering the United States Constitution and the Missouri State Constitution before graduation. Course options are included in the program requirements section below.

RooWriter Assessment
Candidates for all baccalaureate degrees must complete the online UMKC RooWriter Writing Assessment after they have passed Discourse 200 (or its equivalent) but before they have attained 90 credit hours. Incoming transfer students with more than 90 credit hours must complete the RooWriter by the end of their first semester of enrollment or within one semester after passing Discourse 200 (or its equivalent). Students who have not completed the RooWriter Writing Assessment within two semesters after passing Discourse 200 (or its equivalent) will be blocked from enrollment until they successfully complete the RooWriter. Additional information is available in the Undergraduate Academic Regulations and Information (http://catalog.umkc.edu/undergraduate-academic-regulations-information/roowriter) section of the catalog.

Exit Examinations
Information on exit examinations and/or major field exams is available in the Undergraduate Academic Regulations and Information (http://catalog.umkc.edu/undergraduate-academic-regulations-information/graduation/exitexams) section of the catalog.

Student Learning Outcomes
Students graduating from this program will:

- Describe the components and function of Earth systems.
- Explain environmental policy and ethical approaches to environmental issues and global challenges such as climate change, global water scarcity and ocean acidification, energy, consumption and waste management, and urban sustainability.
- Explain environmental challenges from multiple cultural perspectives and through world experiences.
- Apply advanced geographical knowledge, quantitative, and analytical skills to new settings and complex problems.
- Characterize environmental elements analytically and communicate their findings effectively.

Program Requirements

Program Specific Recommendations for UMKC General Education Core (http://catalog.umkc.edu/undergraduate-academic-regulations-information/general-education-requirements) Coursework

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchor I</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Anchor II</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Anchor III</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>DISC 100</td>
<td>Discourse I: Reasoning and Values (Speech and Writing)</td>
<td>3</td>
</tr>
<tr>
<td>DISC 200</td>
<td>Discourse II: Culture and Diversity (Writing and Speech)</td>
<td>3</td>
</tr>
<tr>
<td>DISC 300</td>
<td>Discourse III: Civic and Community Engagement (Speech and Writing)</td>
<td>3</td>
</tr>
<tr>
<td>Focus A</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Focus B</td>
<td>(Satisfied in program requirements below)</td>
<td></td>
</tr>
<tr>
<td>Focus C</td>
<td>(May be satisfied by the Constitution course requirement below)</td>
<td></td>
</tr>
<tr>
<td>Focus Elective</td>
<td>(Satisfied in program requirements below)</td>
<td></td>
</tr>
</tbody>
</table>

'Total credits' in this section indicates the number of General Education Core credit hours that are not met by the degree specific requirements outlined below.

Total Credits
Constitution Course Requirement

Section 170.011.1 of the Missouri Revised Statutes, 2015, states that all candidates for a degree issued by a college or university in the state of Missouri must have “satisfactorily passed an examination on the provisions and principles of the Constitution of the United States and of the state of Missouri, and in American history and American institutions.”

Courses at UMKC that satisfy this state requirement are:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CJC 364</td>
<td>The Supreme Court And The Criminal Process</td>
<td>3</td>
</tr>
<tr>
<td>HISTORY 101</td>
<td>U.S. History to 1877 (Focus C) ¹</td>
<td></td>
</tr>
<tr>
<td>HISTORY 102</td>
<td>U.S. History Since 1877 (Focus C) ¹</td>
<td></td>
</tr>
<tr>
<td>HISTORY 360R</td>
<td>Constitutional History of the United States</td>
<td></td>
</tr>
<tr>
<td>HONORS 230</td>
<td>Honors American Government (Focus C) ¹</td>
<td></td>
</tr>
<tr>
<td>POL-SCI 210</td>
<td>American Government (Focus C) ¹</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 3

¹ Course may satisfy both the UMKC General Education Core (Focus C) and Constitution requirements.

There are a few other ways this requirement can be satisfied for students transferring to UMKC:

- Take an equivalent course from the list above at a regionally accredited institution.
- Earn credit for one of the above courses through AP, IB, or CLEP.
- Take a course that directly satisfies the Missouri Constitution Requirement at another Missouri institution.
- Have a previous bachelors degree (or higher) from a regionally accredited institution.
- Have an Associate of Arts degree from a regionally accredited institution.
- Complete the 42 Hour Core at a Missouri institution and have it listed on the official transcript.

College of Arts & Sciences Degree Requirements

Students pursuing the bachelor of arts and bachelor of science degrees must complete a major. Students pursuing the bachelor of liberal arts degree must complete a minor. Additional details are available in the Student Services (http://catalog.umkc.edu/colleges-schools/arts-sciences/student-services) section of the catalog.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALEKS Math Placement</td>
<td>Arts and Humanities Division of CAS ¹</td>
<td>6</td>
</tr>
<tr>
<td>Science and Math Division of CAS (Satisfied in program requirements below)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social and Behavioral Sciences Division of CAS</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Writing Intensive Course (300-level or above; Satisfied in program requirements below)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 110</td>
<td>College Algebra (or any 200-level or above Math/Stat course; Satisfied in program requirements below)</td>
<td></td>
</tr>
<tr>
<td>or MATH 116</td>
<td>Mathematics For Liberal Arts</td>
<td></td>
</tr>
<tr>
<td>or MATH 120</td>
<td>Precalculus</td>
<td></td>
</tr>
<tr>
<td>Laboratory Science Experience (Satisfied in program requirements below)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 9

¹ ENGLISH 110, ENGLISH 225, COMM-ST 110, and foreign language courses at 211 or below do not fulfill this requirement.
² This requirement may be fulfilled by courses from either the UMKC General Education Core or the College of Arts and Sciences Degree Requirements.

Major Requirements

Students must successfully complete the major requirements below with at least 12 hours of the noted upper division (300+) course requirements completed at UMKC.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>ENV-SCI 110R &amp; ENV-SCI 110L</td>
<td>Understanding the Earth: Introduction to Environmental Science and Laboratory and Understanding the Earth Laboratory (Focus B)</td>
<td>5</td>
</tr>
<tr>
<td>ENV-SCI 210</td>
<td>Issues in Environmental Science (Focus B)</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 203</td>
<td>Introduction to Geographic Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>or UPD 203</td>
<td>GIS For Urban Planning</td>
<td></td>
</tr>
<tr>
<td>GEOG 215</td>
<td>Introduction to Weather and Climate</td>
<td>4</td>
</tr>
<tr>
<td>or GEOG 319</td>
<td>Descriptive and Synoptic Meteorology</td>
<td></td>
</tr>
<tr>
<td>GEOLOGY 250L</td>
<td>Field Methods in Earth and Environmental Science</td>
<td>3</td>
</tr>
<tr>
<td>Select one of the following WI courses:</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ENV-STDY 499WI</td>
<td>Environmental Studies Practicum</td>
<td></td>
</tr>
<tr>
<td>GEOG 499WI</td>
<td>Geography Seminar</td>
<td></td>
</tr>
<tr>
<td>GEOLOGY 499WI</td>
<td>Geology Seminar</td>
<td></td>
</tr>
<tr>
<td>GEOG 403WI</td>
<td>History and Philosophy of Geoscience</td>
<td></td>
</tr>
<tr>
<td><strong>Required Supporting Sciences</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOLOGY 108 &amp; 108L</td>
<td>General Biology I and General Biology I Laboratory (Focus B)</td>
<td>4</td>
</tr>
<tr>
<td>CJC 210/SOCIOL 263 or STAT 235</td>
<td>Introduction To Statistics In Sociology/Criminal Justice and Elementary Statistics</td>
<td>3</td>
</tr>
<tr>
<td>BIOLOGY 109 &amp; 109L</td>
<td>General Biology II and General Biology II Laboratory (Focus B)</td>
<td>4</td>
</tr>
<tr>
<td>or GEOG 360</td>
<td>Principles of Biogeography</td>
<td></td>
</tr>
<tr>
<td>CHEM 211 &amp; 211L</td>
<td>General Chemistry I and Experimental General Chemistry I (Focus B)</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 212R &amp; CHEM 212LR</td>
<td>General Chemistry II and Experimental General Chemistry II (Focus B)</td>
<td>5</td>
</tr>
<tr>
<td><strong>Select three of the following (at least one from each of three division of learning):</strong></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Natural Sciences (NS):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOLOGY 302</td>
<td>General Ecology</td>
<td></td>
</tr>
<tr>
<td>BIOLOGY 303</td>
<td>Invertebrate Zoology</td>
<td></td>
</tr>
<tr>
<td>BIOLOGY 305</td>
<td>Marine and Freshwater Biology</td>
<td></td>
</tr>
<tr>
<td>BIOLOGY 308</td>
<td>Vertebrate Zoology</td>
<td></td>
</tr>
<tr>
<td>BIOLOGY 346</td>
<td>Plant Biology</td>
<td></td>
</tr>
<tr>
<td>CIV-ENGR 454</td>
<td>River Stability and Scour</td>
<td></td>
</tr>
<tr>
<td>CHEM 387</td>
<td>Environmental Chemistry I</td>
<td></td>
</tr>
<tr>
<td>ENV-SCI 310</td>
<td>Field Experience in Waste Management</td>
<td></td>
</tr>
<tr>
<td>ENV-SCI 332CZ</td>
<td>Environmental Sustainability</td>
<td></td>
</tr>
<tr>
<td>GEOG 430</td>
<td>Energy Resources</td>
<td></td>
</tr>
<tr>
<td>ENV-SCI 449</td>
<td>Global Water and Sustainability</td>
<td></td>
</tr>
<tr>
<td>ENV-SCI 496</td>
<td>Environmental Internship</td>
<td></td>
</tr>
<tr>
<td>All Physical Geography courses are applicable as natural science electives:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOG 314</td>
<td>Principles of Geomorphology</td>
<td></td>
</tr>
<tr>
<td>GEOG 319</td>
<td>Descriptive and Synoptic Meteorology</td>
<td></td>
</tr>
<tr>
<td>GEOG 335</td>
<td>Introduction to Waste Management</td>
<td></td>
</tr>
<tr>
<td>GEOG 360</td>
<td>Principles of Biogeography</td>
<td></td>
</tr>
<tr>
<td>GEOG 401</td>
<td>Advanced Geographic Information Science</td>
<td></td>
</tr>
<tr>
<td>GEOG 402</td>
<td>Environmental Remote Sensing and Digital Image Analysis</td>
<td></td>
</tr>
<tr>
<td>GEOG 406</td>
<td>Global Environmental Change</td>
<td></td>
</tr>
<tr>
<td>GEOG 426</td>
<td>Paleoeocology: Microfossils and Climate Change</td>
<td></td>
</tr>
<tr>
<td>GEOG 430</td>
<td>Energy Resources</td>
<td></td>
</tr>
<tr>
<td>GEOG 435</td>
<td>Geoarchaeology</td>
<td></td>
</tr>
<tr>
<td>GEOG 442</td>
<td>Quaternary Environments</td>
<td></td>
</tr>
<tr>
<td>GEOG 444</td>
<td>Spatial Data Analysis</td>
<td></td>
</tr>
<tr>
<td>GEOG 448</td>
<td>Satellite Climatology</td>
<td></td>
</tr>
</tbody>
</table>
Any Geology course may be used for additional natural science electives, but the following courses are particularly relevant to the Environmental Studies major:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOLOGY 312</td>
<td>Mineralogy</td>
</tr>
<tr>
<td>GEOLOGY 313</td>
<td>Evolution and the Geologic Record</td>
</tr>
<tr>
<td>GEOLOGY 314</td>
<td>Principles of Geomorphology</td>
</tr>
<tr>
<td>GEOLOGY 326CZ</td>
<td>Archaeology of Ancient Disasters</td>
</tr>
<tr>
<td>GEOLOGY 460</td>
<td>Introduction to Geochemistry</td>
</tr>
</tbody>
</table>

Social Sciences (SS):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 420</td>
<td>Environment, Resources And Economic Growth</td>
</tr>
<tr>
<td>ENV-SCI 220</td>
<td>Ecosystem Science for Decision Makers</td>
</tr>
<tr>
<td>ENV-SCI 332CZ</td>
<td>Environmental Sustainability</td>
</tr>
<tr>
<td>ENV-STUDY 325</td>
<td>Cultural Perspectives on the Environment</td>
</tr>
<tr>
<td>ENV-STUDY 334</td>
<td>Gender and the Environment</td>
</tr>
<tr>
<td>ENV-STUDY 450</td>
<td>Ecotoxicology</td>
</tr>
<tr>
<td>GEOG 309</td>
<td>Urban Geography</td>
</tr>
<tr>
<td>GEOG 311</td>
<td>Economic Geography</td>
</tr>
<tr>
<td>GEOG 333</td>
<td>Geographic Elements of Urban Planning</td>
</tr>
<tr>
<td>GEOG 437</td>
<td>Population Geography</td>
</tr>
<tr>
<td>GEOG 460</td>
<td>Transportation Geography</td>
</tr>
<tr>
<td>PUB-ADM 497</td>
<td>Special Topics In Public Administration (Urban Environmental Policy)</td>
</tr>
<tr>
<td>PUB-ADM 497</td>
<td>Special Topics In Public Administration (Managing for Sustainability in an Urban Environment)</td>
</tr>
<tr>
<td>POL-SCI 380</td>
<td>Political Science And Politics</td>
</tr>
<tr>
<td>POL-SCI 435</td>
<td>Politics Of The Environment</td>
</tr>
<tr>
<td>UPD 280</td>
<td>Land Use Planning</td>
</tr>
<tr>
<td>UPD 420</td>
<td>Transportation Planning</td>
</tr>
<tr>
<td>UPD 430</td>
<td>Planning For Historic Preservation</td>
</tr>
<tr>
<td>UPD 432</td>
<td>Urban Environment Planning And Design</td>
</tr>
<tr>
<td>UPD 340</td>
<td>Neighborhood And Community Development</td>
</tr>
</tbody>
</table>

Ethics, Jurisprudence, and Culture (E):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENV-STUDY 325</td>
<td>Cultural Perspectives on the Environment</td>
</tr>
<tr>
<td>GEOG 329</td>
<td>World Political Geography</td>
</tr>
<tr>
<td>GEOG 332</td>
<td>Cultural Geography</td>
</tr>
<tr>
<td>GEOG 340</td>
<td>Geography of the United States and Canada</td>
</tr>
<tr>
<td>GEOG 341</td>
<td>Geography of South America</td>
</tr>
<tr>
<td>GEOG 342</td>
<td>Geography of Mexico, Central America and the Caribbean</td>
</tr>
<tr>
<td>GEOG 350</td>
<td>Geography of Europe</td>
</tr>
<tr>
<td>GEOG 403WI</td>
<td>History and Philosophy of Geoscience</td>
</tr>
<tr>
<td>GEOG 499WI</td>
<td>Geography Seminar</td>
</tr>
<tr>
<td>HISTORY 365A</td>
<td>American Environmental History</td>
</tr>
<tr>
<td>LAW 8725</td>
<td>Water Law</td>
</tr>
<tr>
<td>LAW 8728</td>
<td>Law And The American Indian</td>
</tr>
<tr>
<td>LAW 8729</td>
<td>Preservation Law</td>
</tr>
<tr>
<td>LAW 8773</td>
<td>Environmental Law</td>
</tr>
<tr>
<td>LAW 8782R</td>
<td>U.S. Environment Protection Agency Law Internship:National Agricultural Compliance Assistance Center</td>
</tr>
<tr>
<td>PHILOS 370</td>
<td>Environmental Ethics And Policy</td>
</tr>
<tr>
<td>UPD 260</td>
<td>History Of Planning And Urban Design</td>
</tr>
<tr>
<td>UPD 320</td>
<td>Planning Theory And Practice</td>
</tr>
<tr>
<td>UPD 450</td>
<td>Planning Law And Practice</td>
</tr>
</tbody>
</table>

Total Credits: 52
Math and Science Requirements
The Bachelor of Science degree requires a minimum of 60 hours in math and science coursework. The number of credit hours needed to meet this minimum requirement are listed below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Additional Math/Science Coursework</td>
<td>14</td>
</tr>
</tbody>
</table>

General Electives
Students must take elective credit hours to meet the minimum credit hour requirement for their degree, including at least 36 credit hours of coursework at the 300-level or above. The minimum required by the university is 120 credit hours, of which at least 30 credit hours must be taken at UMKC, but some degree programs require more.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Electives</td>
<td>21</td>
</tr>
</tbody>
</table>

Minimum GPA: 2.0
Total Credit Hours: 120

Tools for Planning and Fulfilling Academic Requirements
UMKC's Major Maps (https://cf1.umkc.edu/majormaps) are detailed, semester by semester plans that lead a student to complete all degree requirements within four years. Plans include benchmarks and critical courses by term that assist a student's evaluation of progress and major "fit". In order to ensure that the appropriate courses are taken, students are encouraged to consult with the undergraduate advisor for this major.

UMKC's Degree Audit System (https://www.umkc.edu/registrar/majors-degrees/planmydegree.asp) provides an individual evaluation of all degree requirements (General Education Core, Degree Specific, Major Specific, etc.) for student's officially recorded (Office of Registration and Records) and "what if" plans of study. This evaluation is used to certify all graduation requirements.