Professional Science Masters in Environmental Geology

The Department of Geology, in collaboration with the KU Edwards Campus, offers an online professional science masters (PSM) degree in environmental geology. This applied program differs from traditional thesis-based research MS degrees in Geology through the addition of project management, communication, and other professional skills courses. The degree also requires a professional capstone project that is tailored to match a student's career goals. The program is intended to develop future government and industry professional leaders in environmental geology and to supply working professionals with scientific background and technical skills necessary for addressing environmental problems. It may be completed in as little as two years, or at a pace appropriate to a non-traditional student lifestyle.

Coursework for the PSM in Environmental Geology degree (https://edwardscampus.ku.edu/environmental-geology-masters/) is offered entirely online or in online-hybrid mode, with the exception of the three (3) required 1-credit-hour field techniques workshop courses, which are offered in-person. The field courses typically meet at the Edwards or Lawrence campus on a single Saturday, and are supplemented with online materials over the course of 8 weeks. Students may, alternatively, attend a week-long summer field course which is held in Colorado, and earn three workshop credit hours to fulfill the program's workshop requirements.

Environmental geology is an interdisciplinary field that seeks to address and study anthropogenically-derived and naturally occurring environmental hazards on Earth. The field is grounded in basic geological sub-disciplines such as mineralogy, sedimentology and stratigraphy but has primary focus on hydrogeology, geochemistry, geophysics and components of engineering geology. These sub-disciplines and the associated field and laboratory techniques in the form of a PSM program lead to an applied understanding of how to utilize geophysical, geochemical and hydrogeological techniques to evaluate, remediate, and monitor the impact or potential impact of contamination.

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Admission to Graduate Studies

Admission Requirements

- All applicants must meet the requirements outlined in the Admission to Graduate Study (https://policy.ku.edu/graduate-studies/admission-to-graduate-study/) policy.
- Bachelor's degree: A copy of official transcripts showing proof of a bachelor's degree (and any post-bachelor's coursework or degrees) from a regionally accredited institution, or a foreign university with equivalent bachelor's degree requirements is required.
- English proficiency: Proof of English proficiency (https://gradapply.ku.edu/english-requirements/) for non-native or non-native-like English speakers is required. There are two bands of English proficiency, including Admission and Full proficiency. For applicants to online programs, Full proficiency is required.

1. A Bachelor's degree in geology from an accredited institution as evidenced by an official undergraduate transcript is required. Those with a related degree and 20 semester hours of geoscience coursework in geology, physical geography, engineering, or hydrology may be eligible. In some instances, relevant work experience in environmental geology may substitute for missing courses.

2. A grade-point average of B (3.0 on a 4.0 scale) for all previous university work is required. Under extenuating circumstances an average below 3.0 can be considered by the PSM-EG Committee for provisional admission.

Individuals who are not already enrolled as KU graduate students must complete an application to the Graduate School for admission into the certificate program and submit an application fee along with the following materials:

- A Statement of Interest in the environmental geology program. This 1- or 2-page narrative should summarize your education, employment history, your long-term career goals, and how this certificate will help you achieve these goals.
- Official undergraduate and any post-graduate transcripts.
- Three letters of recommendation from persons familiar with your academic work or qualified to offer judgment on your ability to undertake graduate-level work (former professor of instructor, workplace supervisor).

Current KU graduate students wishing to enroll in the Professional Science Masters degree in Environmental Geology will apply through the Graduate School. A student must be in good standing with their graduate degree program in order to participate in the certificate program. A graduate GPA of 3.0 or higher is required for admission. Awarding of degrees will be handled consistent with guidelines and timing of degree awards of the Graduate School. Completion of the degree will appear on the graduate transcript. KU graduate students should submit the following materials:

- A Statement of Interest in the PSM in Environmental Geology program and its relationship to your graduate course of study.
- An unofficial copy of your KU transcript.
- A letter of support from your graduate degree program (your advisor or graduate director).

Application decisions will be made by consensus of the PSM-EG Committee. In the event of no consensus on an applicant, the decision will default to the decision of the PSM-EG Academic Director.

This program may be completed entirely online, with the exception of the required Field Workshops. The Field Workshops are offered at the KU Edwards Campus in Overland Park or at the KU Lawrence Campus, or at KU's field station in Colorado, and can be completed over one day or weekend.

The PSM-Environmental Geology degree requires a minimum of 36 credit hours. 50% or more of course work must be completed at the 700 level or above.

Professional Skill Courses (12 credit hours)

Code	Title	Hours
PFS 804	Project Management for Professionals	3
PFS 802	Managing Teams and Leading People	3
or PUAD 854	Innovation and Organizational Change	
PFS 803	Financial Management for Professional Success	3
PFS 730	Writing and Speaking for Decision Makers	3
or PFS 801	Interpersonal and Persuasive Communication Skills for Managers	
Or other professional skills courses chosen in consultation with an advisor		

Science Concentration (12 credit hours)

Code	Title	Hours
EVRN 721	Environmental Regulation and Policy	3
GEOL 751	Physical Hydrogeology	3
GEOL 753	Chemical and Microbial Hydrogeology	3
GEOL 755	Site Assessment	3

Required Field Workshops (3 credit hours)

Code	Title	Hours
GEOL 536	Geological Log Analysis	1
GEOL 556	Field Methods in Hydrology	3
GEOL 557	Environmental Site Operations, Management, and Safety: HAZWOPER Health and Safety Standards	3
GEOL 851	Field and Laboratory Methods: Physical Hydrogeology	1
GEOL 853	Field and Laboratory Methods: Chemical Hydrogeology	1
GEOL 855	Field and Laboratory Methods: Environmental Geophysics	1
GEOL 856	Field and Laboratory Methods Special Topics: _____	1
GEOL 791	Advanced Topics in Geology: _____	1-5

Elective Courses (Choose at least 6 credit hours)

Code	Title	Hours
GEOL 503	Numerical Methods in the Earth Sciences	2-3
GEOL 557	Environmental Site Operations, Management, and Safety: HAZWOPER Health and Safety Standards	3
GEOL 591	Topics in Geology: _____ (Professional Geologist Exam Review)	1-5
GEOL 591	Topics in Geology: _____ (Introduction to R for the Geosciences)	1-5
GEOL 754	Contaminant Transport	3
GEOL 758	Applied Groundwater Modeling	3
GEOL 791	Advanced Topics in Geology: _____ (Food, Energy, Water adn Public Policy)	1-5
EVRN 510	Advanced Environmental Applications in Geospatial Techniques	3
EVRN 730	Environmental Toxicology	3
EVRN 736	Environmental Remote Sensing	3
EVRN 720	Topics in Environmental Studies: _____	1-6
Or other elective chosen in consultation with an advisor		

Capstone Requirement

Code	Title	Hours
GEOL 814	Professional Science Masters Environmental Geology Capstone I	1
GEOL 815	Professional Science Masters Environmental Geology Capstone II	2

At the completion of this program, students will be able to:

- Apply disciplinary and/or thematic training to practical situations through quantitative analysis, critical thinking assignments, or case studies.
- Synthesize and evaluate disciplinary concepts and ideas to assess environmental conditions and make responsible decisions in the best interest of populations impacted by environmental issues as displayed in discussions, projects, homework problems and essays.
- Identify and develop new or original interpretation or analysis of a relevant environmental topic through the application of program curriculum in course projects and the Capstone Experience course proposal and report.
- Communicate effectively in a professional environment through technical reports, graphical illustrations, or presentations.
- Demonstrate effective management and collaboration skills through project development and group work.