

PROPOSAL FOR AN ONLINE PROGRAM

Date: September 17, 2024

College/School: Franklin College of Arts and Sciences

Department/Division: Geology

Program (Major and Degree): Geology (M.S.)

Will any approved areas of emphasis be offered under this major? Environmental Geology

Proposed Effective Date: Fall 2025

The proposal for an online program must include a brief narrative that addresses the following points:

1. Assessment

A needs assessment demonstrating a sufficient pool of qualified applicants.

The Department of Geology will be offering the Area of Emphasis in Environmental Geology under the major in Geology M.S. online. Faculty solicited input from its students, faculty, alumni advisory board, and industry contacts in the development of this proposal and incorporated that feedback in the program design of the area of emphasis. The program reflects state, regional, and national employment trends and emerging skills and tools. The job outlook for Environmental Geology graduates is strong. Environmental geology is an in-demand field with competitive salaries and more available positions than qualified candidates. Graduates who pursue this online degree with area of emphasis and resulting credentialization will have expanded opportunities compared to those who do not pursue this option. Overall employment for UGA graduates with geology degrees presently hovers between 95-100% within 3 months of graduation.

Environmental Geology graduates should enjoy similar employment outcomes based on available data. A survey of occupational projections in Lightcast suggests that jobs in this area at all degree levels will see 9.71% growth (+1,200 jobs) in Georgia between 2024-2029. The U.S. Bureau of Labor Statistics states the nationwide job outlook for geoscientists is predicted to grow by 5% through 2032, faster than average for all occupations. From December 1, 2022, to March 1, 2024, there were 433 relevant jobs posted in the state of Georgia appropriate for a person with a master's degree. An analysis of the skills from these job postings revealed that employers are most commonly looking for the following skills, each of which would be developed and supported by the Environmental Geology program: geology, communication, environmental science, social science, management, project management, biology, chemistry, leadership, investigation, physics, environmental engineering, groundwater, and business development planning.

Labor Market/Career Placement Outlook/Salary:

Occupation	O*Net ¹	Current Employment	% Growth	Average Salary (O-Net data)	Future Earnings Potential (O-Net data)
Industrial Production Managers	(Outlook)	5002		\$133,827	
Natural Sciences Managers		1902		\$119,309	
Environmental Engineers		898		\$98,987	
Mining and Geological Engineers, Including Mining Safety Engineers		77		\$109,887	
Petroleum Engineers		106		\$141,157	
Soil and Plant Scientists		387		\$78,274	
Conservation Scientists		483		\$77,277	
Geoscientists, Except Hydrologists and Geographers		547		\$77,376	
Hydrologists		621		\$92,527	
Geological Technicians, Except Hydrologic Technicians		92		\$75,343	
Hydrologic Technicians		85		\$67,330	

¹National Center for O*NET Development. O*NET *OnLine*. Retrieved [include date] from <https://www.onetonline.org/>

Qlik Projected Employment Outlook Data

Projections within Statewide by SOC Occupation:

- Region: Statewide
- 2-Digit SOC: 13
- 6-Digit SOC: 13.2011
- Occupation: Accountants and Auditors
- Typical Education: Bachelor's Degree
- Work Experience: None
- On-the-Job Training: None
- 2020 Base Employment: 35,860

- 2030 Projected Employment: 41,580
- Total Change: 5,720
- Percent Change: 16.0%
- Annual Growth Rate: 1.5%
- Annual Labor Force: 1,080
- Annual Occupational Transfer: 2,290
- Annual Change: 570
- Annual Occupational Openings: 3,940

2. Admission Requirements

Prospective students will apply to the UGA Graduate School and include the following:

- a) Three letters of recommendation
- b) C.V./Resume
- c) Statement of Purpose that addresses background, particularly research background, objectives, and career goals. The letter should specifically address the applicant's prospective advisor at UGA and how working with them at UGA will help the applicant reach their goals
- d) Official transcript

Although there are no formal course requirements for admission to the major, previous coursework and training should reflect preparation for advanced study in environmental geology (e.g. coursework in geology or related discipline, work and/or research experience, publications, presentations, REU participation, senior thesis).

3. Program Content

The Area of Emphasis in Environmental Geology will be offered online. The requirements for this area of emphasis are:

STEM Core (18 hours)

- CRSS(GEOL) 8710, Watershed-Scale Modeling (3 hours)
- GEOL 6130, Aqueous Environmental Geochemistry (3 hours)
- GEOL 6220, Hydrogeology (3 hours)
- GEOL 6530-6530L, Principles and Environmental Applications of GIS (3 hours)
- GEOL 8370, Data Analysis in the Geosciences (3 hours)
- GEOL 8770, Hazardous Waste Site Remediation (3 hours)

Interdisciplinary Core (3 hours)

- ENVM(AAEC) 6800, Water Resources Economics (3 hours)

Scientific Communication and Research Experience (9 hours)

- GEOL 6930, Science Communication (3 hours) – **NEW**

GEOL 8780, Research Experience in Environmental Geology (6 hours) – **NEW**

Environmental Geology

STEM Core (18 hours)

GEOL6220 Hydrogeology, 3 hours

GEOL6130 Aqueous Environmental Geochemistry, 3 hours

GEOL8770 Hazardous Waste Remediation, 3 hours

GEOL8710 Watershed-scale Modeling, 3 hours

GEOL8370 Data Analysis in the Geosciences, 3 hours

GEOL6530 Principles and Environmental Applications of GIS, 3 hours

+

Interdisciplinary Core (3 hours)

ENVM 6800 Water Resource Economics and Management, 3 hours

+

Scientific Communication & Research Experience (9 hours)

GEOL6930 Science Communication, 3 hours (NEW)

GEOL8780 Research Experience in Environmental Geology, 6 hours (NEW)

Program of Study

Fall Semester Year 1:

GEOL6220E Hydrogeology, 3 hours

GEOL6130E Aqueous Environmental Geochemistry, 3 hours

Spring Semester Year 1:

GEOL8370E Data Analysis in the Geosciences, 3 hours

GEOL6530E Principles and Environmental Applications of GIS, 3 hours

Summer Semester:

ENVM6800E Water Resources Economics and Management, 3 hours

GEOL6930E Science Communication, 3 hours (NEW)

Fall Semester Year 2:

GEOL8770E Hazardous Waste Remediation, 3 hours

GEOL8710E Watershed-scale Modeling, 3 hours

Spring Semester Year 2:

GEOL8780E Research Experience in Environmental Geology, 6 hours (NEW)

E-suffix versions of the above courses will be proposed in CAPA prior to implementation of the Area of Emphasis in Environmental Geology.

4. Student Support Services

Each proposal must describe how students will have access to appropriate learning and student support services to ensure full participation in the learning experience. Services to be considered include academic advising or an advisory committee, technology support, financial aid advising, career planning, and disability services. Any special accommodations made for distance education students must be described.

Students enrolled in the Area of Emphasis in Environmental Geology will benefit from a comprehensive array of learning and support services designed to foster their full participation and success. An Admissions and Advising committee for the program will be formed. This

committee will consist of members who will oversee the admission process and provide academic advising after admission.

Academic Advising: The Advising committee members will provide robust advising to help students navigate the program and achieve their academic and career goals.

Technical Support: The Office of Online Education will maintain a reliable and user-friendly Learning Management System that supports multimedia content, interactive elements, and assessments. Furthermore, they will also ensure that students have access to technical support for any issues related to the online learning platform.

Financial Aid: Students needing advice on financial aid will be directed to the [Office of Student Financial Aid](#) for information about financial assistance.

Career Planning: The [UGA Career Center](#) offers excellent career counseling to meet the unique career development needs of [Graduate and Professional students](#), including opportunities to build professional networks and career development eLC modules that are specifically designed to help achieve professional goals. Additionally, the Career Center also provides a variety of resources for student support.

Disability Services: The [Disability Resource Center](#) (DRC) at the University of Georgia is dedicated to supporting students with disabilities who qualify for admission. Their mission is to ensure equal educational opportunities in compliance with the ADA and other relevant legislation, while also fostering a welcoming academic, physical, and social environment for these students. The DRC's professional staff work directly with students to evaluate their individual disability-related needs and develop appropriate plans for academic accommodations and services. The DRC also offers three key services to support a variety of student needs: the Test Accommodations Office for onsite classroom testing, the Assistive Technology Lab with various programs designed for people with disabilities, and Alternative Media Services to assist students with print or reading disabilities by converting course materials into accessible formats.

Special Accommodations: The Office of Online Education and the Department of Statistics will work with DRC to ensure the program's online materials are accessible to all students, including those with disabilities.

This holistic support structure is designed to empower students, enabling them to fully engage with their education and achieve their professional goals. Program advisors will actively work to connect students with on-campus services at UGA, ensuring they have access to additional resources in areas such as mental health support, academic workshops, and extracurricular opportunities that enhance their overall educational experience.

5. Resident Requirements

Residence requirements will be identical to those established for the authorized degree program with residence at the approved location serving to meet that requirement.

6. Program Management

Each proposal must contain a specified plan for program maintenance and program quality. This plan will provide contact persons at cooperating units, a detailed timetable, and complete plans for application and matriculation of students. In addition, specific plans should be provided

concerning the schedule of courses, the duration of the program, program review, and possible duplication with other programs in the immediate area.

To ensure the ongoing maintenance and quality of the EG program, a structured plan has been established. The program will undergo a comprehensive review every three years, involving input from faculty, industry experts, and student feedback to assess curriculum relevance and effectiveness. Applications will be accepted on a rolling basis, with deadlines set for January 15 and July 15 each year, allowing for timely matriculation in the fall and spring semesters. The program is designed to be completed in two years, requiring students to complete a set schedule of courses, including core classes in the first year and electives or capstone projects in the second year. Course offerings will be offered on a set schedule and will be released in June, to remind students in advance. To minimize duplication with similar programs in the immediate area, the curriculum will be regularly benchmarked against local offerings, focusing on unique aspects of environmental geology and interdisciplinary approaches. This systematic plan will help maintain high academic standards and respond to the evolving needs of the field.

7. Library and Laboratory Resources

The proposal must include a review of existing library and laboratory resources (or other specialized resources) at the host location. If deficiencies exist, the proposal must include a plan, including timetable and budget, for alleviating the deficiencies.

Students in the online Geology (M.S.) will have full access to UGA's extensive library resources, ensuring they can conduct thorough research and utilize academic materials from anywhere. All coursework is designed to be completed online, eliminating the need for in-person laboratory experiences. Instead, students will engage with industry-standard computer programs and applications, such as GIS and modeling software, allowing them to develop essential skills in a flexible, virtual environment.

8. Budget

The budget must provide a realistic estimate of the costs of developing and implementing a quality program. Consequently, each program budget must contain detailed estimates—specified separately for authorized and cooperating units—concerning faculty and staff positions, library, laboratory, and other specialized facility resource requirements, travel and other significant operating expenses. If the support for the program is the result of an internal reallocation of resources, explicit details should be included in the proposal. The budget must reflect the start-up costs of the program, projected costs for completion of the first cycle of students, and additional costs associated with any future cycles of students.

See attached.

9. Program Costs Assessed to Students

Any costs beyond those normally associated with the program on campus must be spelled out and justified.

There are no additional costs beyond those normally associated with the program.

10. E-Rate

If an e-rate will be charged, an approved e-rate form must be submitted through the Office of

Online Learning at <https://faculty.online.uga.edu/administrators/budgeting-funding/requesting-e-rate-differential/>.

This program will use the standard e-rate.



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5 August 2024

University of Georgia
Franklin College of Arts & Sciences - Department of Geology

Attention: Dr. Adam Milewski, Ph.D.
Department Head

Subject: Professional M.S. Degree in Environmental Geology

Dear Dr. Milewski:

Per our last conversation regarding the wonderful things happening at UGA, I wanted to follow up with you regarding the concept you presented to me pertaining to the Professional M.S. degree in Environmental Geology. As you are well aware, Haley & Aldrich, Inc. has hired several Geology and Environmental Science graduates in the last few years. I personally have found that the students graduating from UGA have a firm grasp of theoretical concepts in geology and a practical understanding of the work being completed in industry. The outline of the program that you shared with me would be a wonderful addition to your current offerings.

Your careful consideration of offering a flexible approach to this degree to allow for professionals to continue their education is very important. I could see many professionals looking to continue their education gravitate toward an applied program like this. The curriculum very closely aligns with the types of projects we are working on and reflect the challenges facing our clients/communities in the future. I fully support you and your efforts to make this a reality, please let me know what I can do to support you and your department in the future.

Sincerely yours,

Christopher K. Jones

Senior Associate/Group Leader – Hydrogeology
Haley & Aldrich, Inc.
3 Bedford Farms Drive
Bedford, NH 03110

https://haleyaldrich-my.sharepoint.com/personal/cjones_haleyaldrich_com/Documents/Documents/Letter of Support- PEG degree .docx

www.haleyaldrich.com



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Date: April 12, 2024

To: Adam M. Milewski, Ph.D.
Department Head - Professor of Hydrogeology & Remote Sensing
Department of Geology
Franklin College of Arts & Sciences
University of Georgia

Subject: Letter of Support - Professional M.S. Degree in Environmental Geology

Dear Dr. Milewski:

It is my pleasure to write a letter in support of the proposed Professional M.S. degree in Environmental Geology at the University of Georgia, Department of Geology. As an alumnus of the Department and a professional geologist, I fully support the efforts of the Department as they embark the M.S. degree in Environmental Geology program. As you and I have discussed in the past, finding well-trained environmental geologists has been a challenge to the environmental consulting industry. Environmental Consulting businesses are investing time and resources to train graduates after hiring. Therefore, I can attest to the benefit of the Professional M.S. degree in Environmental Geology in alleviating the shortages of geologists that we are currently experiencing. I also had the opportunity to review the program description and curriculum road map. The courses included in the curriculum are well designed to train the next generation leaders in the field of environmental consulting.

I am confident that graduates of this program will match Geosyntec's hiring needs and we gladly recruit graduates of the new Professional M.S. degree in Environmental Geology. I am happy to let you know that Geosyntec will support the proposed program in any way we can. Please let us know how we can help during the approval process and beyond.

Best regards,

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Dawit D. Yifru Ph.D., P.G. (AL, GA, TN, KY, NC, MS)
Principal Geologist



4 August 2024

Dear Adam,

Thank you for asking for my thoughts on the potential implementation of a professional M.S. degree in environmental geology (PEG) to the geology department at UGA. As an alumnus of UGA's geology department now working as a consulting geologist with WSP's environmental site and remediation team, I can confidently say that I give my wholehearted support for the implementation of this degree. The focus of this master's degree program in more traditional geology-related fields such as groundwater modeling, hydrogeology, and geochemistry should give students a sound technical background to succeed in the industry. Also, the interdisciplinary learning offered for this program in fields outside of traditional geology such as environmental policy, project management and data analysis are imperative for continued success as an environmental professional. This expertise, along with the networking and real-world problem-solving opportunities provided should set the path for PEG M.S. degree holders to thrive as environmental professionals. I am confident that WSP and other well-respected firms are readily looking to hire individuals with the skills and expertise offered by this program. Furthermore, had this master's degree been offered when I graduated from UGA I would have strongly considered applying. I look forward to seeing this program offered in the near future, and as always, Go Dawgs!

Best,

A handwritten signature in black ink, appearing to read 'Mark Mann'.

Mark Mann



Mark Mann
Associate Consultant, Geologist
he / him / his

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