

# Stackable Certificate Programs, Geological Sciences

---

Stackable graduate certificates are available to degree-seeking and non-degree-seeking graduate students. Some stackable certificates may be awarded following completion of program requirements, while others require simultaneous awarding of the graduate certificate and a graduate degree.

See the [Stackable Certificates section](#) of this catalog for additional information and policies related to stackable certificates.

The graduate program for this catalog section offers the following stackable certificate programs. To see a full list of graduate certificates offered at the University, please see the [Graduate Study](#) section of the *Graduate Catalog*.

## Geological Sciences: Machine Learning and Data Analytics (ML/DA)

The stackable graduate certificate in Geological Sciences: Machine Learning and Data Analytics (ML/DA) provides an organized framework to train students to be world leaders at the forefront of earth and data science. This stackable certificate program is designed primarily for geoscience graduate students and working geoscientists from industry, academia, and government organizations who desire additional expertise in modern tools of data analytics and machine learning. Geoscientists with their domain expertise and required training in ML/DA are better placed to make use of these advanced techniques for geoscientific problem solving. The program will require completion of four graduate courses (12 semester credit hours) in Geological Sciences, including a three-hour capstone project course. The program is available to degree-seeking and non-degree-seeking students.

Requirements	Hours
GEO 398D Topics in Machine Learning Data Analytics (Topic 5: Machine Learning Research)	3
Nine additional hours selected from the following:	9
GEO 398D Topics in Machine Learning Data Analytics	
GEO 398D Topics in Machine Learning Data Analytics (Topic 1: Introduction to Machine Learning for Geosciences)	
GEO 398D Topics in Machine Learning Data Analytics (Topic 2: Applications of Data Analysis, Visualization, and Machine Learning)	
GEO 398D Topics in Machine Learning Data Analytics (Topic 3: Data Analytics and Geostatistics)	
GEO 398D Topics in Machine Learning Data Analytics (Topic 4: Subsurface Machine Learning)	
GEO 392P Python for Geoscience Research	
GEO 393D 3D Analysis of Volumetric Data	
<b>Total Hours</b>	<b>12</b>