Minor and Certificate Programs

Minors

The transcript-recognized undergraduate academic minor must be completed in conjunction with an undergraduate degree at The University of Texas at Austin. For more information regarding the requirements for achieving a minor, including a comprehensive list of minors, please visit the Minors and Certificate Programs section of the *Undergraduate Catalog*.

Students admitted to transcript-recognized minors must contact their academic advisors to have approved minors added to their degree audit profiles. This allows progress toward the credential to be tracked and ensures that minors are added to official transcripts upon graduation, if all requirements are met.

Minors for Geosciences Majors

While a minor is not required as part of any geosciences degree program, students may choose to complete a minor in a field of study other than their major and to which they gain entry. Students may declare only one minor or certificate to supplement their Jackson School major.

Jackson School students must declare their minor/certificate intentions before they have completed 65 percent of their degree requirements, as indicated on the Interactive Degree Audit (IDA). Exceptions to these policies require prior approval by the dean.

Minors for Non-Geosciences Majors

The minors offered by the Jackson School of Geosciences promote the understanding of Earth as a system, its resources, and environment, for the lasting benefit of humankind. Any non-geosciences student with a University grade point average of at least 2.5 may apply to a JSG minor. Students must apply for admission to the minor, have it added to their degree profiles, successfully complete all requirements, and apply to graduate for it to appear on their transcript.

The Jackson School reserves the right to limit the number of students accepted to the minor. If demand exceeds space, students will be selected based on review of a student's academic record. Acceptance into the minor does not come with preferences or guarantee of a seat in any GEO course. Registration for any of these courses will require that existing prerequisite course requirements are adequately met.

For more information, please visit the Minor and Certificate Programs section in The University chapter.

Computational Geosciences Minor

The Computational Geosciences Minor provides a selection of courses that will establish an understanding of computational methods in geosciences. The courses in this minor emphasize the understanding of geophysical and geochemical laws and their equations. Students completing this minor will gain knowledge on how to solve such equations, both analytically and numerically, to solve specific geoscience problems (e.g., transport in porous media to study pollutant plumes, wave equation to study earthquakes and seismic methods). Students will use high-level programming tools (e.g., MATLAB, Python).

The Computational Geosciences Minor requires 15 credit hours as follows:

Requirements		Hours
GEO 303	Introduction to Geology	3 or 4
or GEO 401	Physical Geology	
GEO 354	Physics of Earth	3
One of the following four courses:		**3**
GEO 325G	Computational Applications in the Geosciences	
GEO 325K	Computational Methods	
GEO 325M	Numerical Modeling in the Geosciences	
GEO 366M	Mathematical Methods in Geophysics	
Two upper-division GEO courses:		**6 or 7**
GEO 344U	Quantitative Seismic Interpretation	
GEO 347G	Climate System Modeling	
GEO 355G	Geodynamics of the Lithosphere and Mantle	
GEO 360G	Construction and Interpretations of 3-D Stratigraphy	
GEO 365N	Seismic Data Processing	
GEO 365P	Potential Field Applications in Geophysics	
GEO 465K	Seismic Exploration	
A list of additional upper-division course options is available on the JSG website.		

Please Note:

Registration for any of these courses requires that existing prerequisite course requirements are adequately met.

Petitions to substitute another course to use toward any requirement must be submitted to the JSG Advising Office prior to the start of the semester in question.

Geosciences Minor

The Geosciences Minor provides a selection of courses that will establish an understanding of the Earth's history, evolution, and properties. The courses in this minor emphasize the chemical, physical, and biological processes that shape the Earth system. Students completing this minor will gain knowledge in the methods geologists use to characterize geological processes, such as identifying rocks, minerals, and fossils. They will also examine the role of geological processes on geological hazards (e.g. volcanos, tsunamis) and water and energy resources. The opportunity to gain skills analyzing data from laboratory and field settings supplement multiple other areas of study such as engineering, education, and business.

The Geosciences Minor requires 16 credit hours as follows:

Requirements		Hours
GEO 303	Introduction to Geology	3 or 4
or GEO 401	Physical Geology	
One of the following three courses:		**4**
GEO 405	Life through Time	
GEO 416K	Earth Materials	
GEO 416M	Sedimentary Rocks	
Three upper-division GEO courses:		**9**
GEO 320L	Introductory Field Geology	
GEO 325G	Computational Applications in the Geosciences	
GEO 339T	Continental Tectonics	

GEO 346C	Introduction to Physical and Chemical Hydrogeology	
GEO 347K	Gems and Gem Minerals	
A list of additional upper-division course options is available on the JSG website.		

Please Note:

Registration for any of these courses requires that existing prerequisite course requirements are adequately met.

Petitions to substitute another course to use toward any requirement must be submitted to the JSG Advising Office prior to the start of the semester in question.

Hydrology Minor

The Hydrology Minor provides a selection of courses that will establish an understanding of the water cycle and associated hydrological processes. The courses in this minor emphasize physical and chemical processes that control the movement of water through the Earth system and water quality. Students completing this minor will gain knowledge in the methods hydrologists use to characterize hydrological processes, including environmental monitoring data and aquifer properties.

The Hydrology Minor requires 16 credit hours as follows:

Requirements		Hours
GEO 303	Introduction to Geology	3 or 4
or GEO 401	Physical Geology	
GEO 346C	Introduction to Physical and Chemical Hydrogeology	3
GEO 476K	Groundwater Hydrology	4
Two upper-division GEO courses:		**6 or 7**
GEO 372S	Geochemical Problem Solving with Atoms and Ions	
GEO 376S	Physical Hydrology	
GEO 476M	Aqueous Geochemistry	
GEO 476W	Hydrogeophysics	
GEO 377K	Applied Karst Hydrogeology	
A list of additional upper-division course options is available on the JSG website.		

Please Note:

Registration for any of these courses requires that existing prerequisite course requirements are adequately met.

Petitions to substitute another course to use toward any requirement must be submitted to the JSG Advising Office prior to the start of the semester in question.

Sedimentology and Earth Surface Processes Minor

The Sedimentology and Earth Surface Processes Minor provides a selection of courses that will establish an understanding of the processes that shape the Earth's surface, the rock record results, and interactions with other systems over time. Students completing this minor will gain an understanding of the changing character of the surface environment of the Earth which is critical for understanding the past and future trajectories for life on Earth.

The Sedimentology and Earth Surface Processes Minor requires 16 credit hours as follows:

Requirements		Hours
GEO 303	Introduction to Geology	3 or 4
or GEO 401	Physical Geology	
GEO 416M	Sedimentary Rocks	4
or GEO 416K	Earth Materials	
Three of the following upper-division GEO courses:		**9 or 10**
GEO 322J	Transitions in the History of Life	
GEO 330K	Energy Exploration	
GEO 344U	Quantitative Seismic Interpretation	
GEO 355G	Geodynamics of the Lithosphere and Mantle	
GEO 360G	Construction and Interpretations of 3-D Stratigraphy	
GEO 365Q	Geomorphology Process and Form	
GEO 369E	Evolution of Reef Ecosystems	
A list of additional upper-division course options is available on the JSG website.		

Please Note:

Registration for any of these courses requires that existing prerequisite course requirements are adequately met.

Petitions to substitute another course to use toward any requirement must be submitted to the JSG Advising Office prior to the start of the semester in question.

Certificates

Computational Science and Engineering Certificate

The Computational Science and Engineering Certificate program is sponsored by the Cockrell School of Engineering, the Jackson School of Geosciences, the College of Liberal Arts, and the College of Natural Sciences; it is administered by the Institute for Computational Engineering and Sciences (ICES). Information regarding the specific requirements of the Certificate can be found in the Cockrell School of Engineering's Minor and Certificates section of the Undergraduate Catalog.