

# Ph.D. in Geological Sciences

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The PhD in Geological Sciences was approved in 1974 as the first doctoral degree program of the University. The PhD program embraces a variety of advanced disciplines in Earth and Environmental Sciences, with research themes focused in Earth System Geochemistry, Geospatial Research, Professional and Entrepreneurial Geosciences, Science Learning and Education, Solid Earth and Geophysics, and Tectonics and Sedimentation, although PhD degrees may be obtained in any field of the geological sciences. The program has a vibrant group of ~20 tenured and tenure-track faculty, with a research portfolio addressing global challenges in the environment and natural resources, while taking advantage of the unique and excellent geological settings in our region for research and education. The PhD program is hosted in the attractive Geological Sciences Building with 90,000-sq.ft spaces for offices, laboratories, and classrooms. The department facilities that support our PhD research include a variety of geochemical instruments for advanced isotope and element analysis (MC-ICP-MS, ICP-MS, ICP-OES, IRMS, Laser isotope analyzer, electron microprobe, laser diffraction particle size analyzer and many others), geophysical research infrastructure (seismometers, gravimeters, magnetometers, differential GPS receivers, surface and downhole conductivity and resistivity tools, ground-penetrating radar), geospatial facility, and extensive computational and software resources.

## Admission Requirements

In addition to the materials required of all doctoral program applicants by the UTEP Graduate School, applicants for the Ph.D. in Geological Sciences must provide

1. Three letters of reference
2. A personal statement/essay explaining the applicant's motivation for pursuing the doctorate and their qualifications and preparation for doctoral study
3. GRE is not a requirement
4. Applicants from countries where English is not the first language are required to demonstrate English proficiency. Please consult the graduate school (<http://catalog.utep.edu/admissions/graduate/graduate-student/>) website for required scores

All admission requirements will be reviewed holistically to assess the potential of the applicant. We strongly encourage applicants to contact the Geological Science faculty for research opportunities.

## Degree Requirements

1. Minimum of 60 semester hours of graduate study beyond the baccalaureate degree or minimum of 30 semester hours of graduate study beyond the Master's degree.
2. Maximum of 12 semester hours of Directed Study coursework in the 60-hour program, 6 semester hours in the 30-hour program.
3. Maximum of 9 semester hours of approved upper-division undergraduate coursework; successful completion of the Comprehensive Exam (Parts I and II)
4. Dissertation of 6 semester hours including successful oral defense (GEOL 6398, GEOL 6399)

All University-wide UTEP requirements for doctoral degrees and student progress will apply. Doctoral students are required to enroll in the Geological Sciences Department Seminar for four semesters.

## Doctoral Candidacy Requirements

1. Successful completion of the prescribed Comprehensive Examination (Parts I and II).
2. Removal of any academic deficiencies, if identified in the results of those Comprehensive Examinations.
3. Approval for Candidacy by the Graduate School upon the recommendation of the Comprehensive Examination Committee.

## Doctoral Committees

For each doctoral candidate, a Doctoral Committee will consist of the dissertation advisor, at least three additional faculty members in the Department of Geological Sciences, and at least one member of the Graduate Faculty from outside the Department of Geological Sciences. The student's Doctoral Committee shall be approved by the Geological Sciences Department's Graduate Program Committee.

## Examinations

A Comprehensive Examination Part I, demonstrating the student's mastery of general knowledge required for completion of a doctorate in Geological Sciences, is required of all students and is expected to be completed during their second semester of enrollment. This examination will be administered by a committee of five faculty members from the Department of Geological Sciences, approved by the Department's Graduate Program Committee. The student's Comprehensive Examination Committee may pass the student without noting any deficiencies, may pass the student conditionally with deficiencies that must be remedied (for example, by completing and passing certain courses within a specified time frame), or may fail the student and require the examination be retaken within a specific time frame. Any student who fails the Comprehensive Examination twice shall be barred from further consideration for Doctoral Candidacy.

The student's Doctoral Committee will administer the Comprehensive Examination part II. The Comprehensive Examination Part II is expected to be completed in the semester following successful completion (with all deficiencies removed) of the Comprehensive Examination Part I. The Comprehensive Examination Part II will consist of an oral defense of the student's written Dissertation Proposal in front of their Doctoral Committee, followed by questioning by the committee. The written dissertation proposal, approved by the student's doctoral advisor, must be submitted to the Doctoral Committee no less than 14 days before the examination.

## Dissertation

A doctoral dissertation is required. This dissertation must demonstrate the candidate's capacity for originality and independence in recognizing a significant research question, in carrying out an effective investigation, and in interpreting and reporting the results. The subject of the dissertation is to be selected in consultation with the dissertation advisor, and it must be approved by the student's Doctoral Committee. The candidate is required to successfully defend the dissertation in an open meeting under the supervision of his or her Doctoral Committee. A draft copy of the dissertation, approved by the student's doctoral advisor, must be submitted to the Doctoral Committee 14 days before the defense.

## Degree Plan

Required Credits: 60

Code	Title	Hours
<b>PhD in Geology (All courses require a grade of C or better)</b>		
<b>Required Courses:</b>		
GEOL 6101	Graduate Seminar (4 semesters required)	4
<b>Electives:</b>		
Select 50 hours of graduate courses in GEOL and/or GEOP and/or ESCI from the following, and other courses in Science or Engineering, subject to approval by the approval by the student's major professor/advisor:		50
ESCI 5315	Topics in Environmental Sci.	
GEOL 5115	Selected Topics in Geol Scien	
GEOL 6105	Directed Study in Geology	
GEOL 6205	Directed Study in Geology	
GEOL 6215	Selected Topics in Geol Scienc	
GEOL 6262	Directed Study in Geology	
GEOL 6289	Graduate Research in Geol Sci	
GEOL 6296	Doctoral Research in Geol Sci	
GEOL 6303	Computer Appl in Earth Sci	
GEOL 6304	Earth Structure	
GEOL 6305	Directed Study in Geology	
GEOL 6345	Earth Materials	
GEOL 6308	Planetary Geology	
GEOL 6310	Intro Entrepreneurial Geosci	
GEOL 6315	Adv Topics in Geological Scien	
GEOL 6318	Petroleum Geology	
GEOL 6322	Advanced GIST	
GEOL 6324	Machine Learning in Geoscience	
GEOL 6330	Sandstone Petrography	
GEOL 6332	Carbonate Petrogrph & Dep. Env	
GEOL 6333	Spat Analysis Earth/Env Sci	
GEOL 6334	Sedimentary Depositional Env	
GEOL 6336	Sequence Stratigraphy	
GEOL 6340	Hydrogeology	
GEOL 6331	Introduction to GIST	
GEOL 6342	Environmental Tracers in Water	
GEOL 6343	Isotope Geology	
GEOL 5344	Advanced Petrology	
GEOL 6342	Environmental Tracers in Water	
GEOL 6365	Basin Analysis	
GEOL 6375	Quantit Techniq Geological Sci	

GEOL 6376	Low Temperature Geochemistry
GEOL 6378	Global Biochemical Cycles
GEOL 6381	Paleoclimatology
GEOL 6396	Doctoral Research in Geol Sci
GEOL 6397	Geol/Mineral Resources Mexico
GEOL 6401	Fundamentals of Earth Science
GEOL 6402	Fundmntls/Fld Meth in Earth Sci
GEOP 6110	Directed Study in Geophysics
GEOP 6210	Directed Study in Geophysics
GEOP 6306	Atmospheric Processes
GEOP 6310	Directed Study in Geophysics
GEOP 6335	Intro to Remote Sensing
GEOP 6336	Digital Image Processing
GEOP 6350	Advanced Seismology
GEOP 5352	Geophysical Inverse Theory
GEOP 6352	Advanced Seismic Methods
GEOP 6353	Reflection Seismic Data Proces
GEOP 6354	Seismology
GEOP 6356	Topics in Geophysics
GEOP 6357	Well Logging
GEOP 6460	Geop App-Digital Signal Proces
GEOP 6361	Plate Tectonics

**Comprehensive Examination:**

Complete Comprehensive Examination

Dissertation:

GEOL 6398 & GEOL 6399	Dissertation I and Dissertation II	6
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**Total Hours****60**