Ph.D. in Geological Sciences

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 Examinations (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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 6101</td>
<td>Graduate Seminar (4 semesters required)</td>
<td>4</td>
</tr>
</tbody>
</table>

**Required Courses:**

**Electives:**

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:

- ESCI 5315  Topics in Environmental Sci.
- GEOL 5115  Selected Topics in Geol Sci
- GEOL 6105  Directed Study in Geology
- GEOL 6205  Directed Study in Geology
- GEOL 6215  Selected Topics in Geol Sci
- 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  Geocomputation
- 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
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 6376</td>
<td>Low Temperature Geochemistry</td>
</tr>
<tr>
<td>GEOL 6378</td>
<td>Global Biochemical Cycles</td>
</tr>
<tr>
<td>GEOL 6381</td>
<td>Paleoclimatology</td>
</tr>
<tr>
<td>GEOL 6396</td>
<td>Doctoral Research in Geol Sci</td>
</tr>
<tr>
<td>GEOL 6397</td>
<td>Geol/Mineral Resources Mexico</td>
</tr>
<tr>
<td>GEOL 6401</td>
<td>Fundamentals of Earth Science</td>
</tr>
<tr>
<td>GEOL 6402</td>
<td>Fundmtls/Fld Meth in Earth Sci</td>
</tr>
<tr>
<td>GEOP 6110</td>
<td>Directed Study in Geophysics</td>
</tr>
<tr>
<td>GEOP 6210</td>
<td>Directed Study in Geophysics</td>
</tr>
<tr>
<td>GEOP 6306</td>
<td>Atmospheric Processes</td>
</tr>
<tr>
<td>GEOP 6310</td>
<td>Directed Study in Geophysics</td>
</tr>
<tr>
<td>GEOP 6335</td>
<td>Intro to Remote Sensing</td>
</tr>
<tr>
<td>GEOP 6336</td>
<td>Digital Image Processing</td>
</tr>
<tr>
<td>GEOP 6350</td>
<td>Advanced Seismology</td>
</tr>
<tr>
<td>GEOP 5352</td>
<td>Geophysical Inverse Theory</td>
</tr>
<tr>
<td>GEOP 6352</td>
<td>Advanced Seismic Methods</td>
</tr>
<tr>
<td>GEOP 6353</td>
<td>Reflection Seismic Data Proces</td>
</tr>
<tr>
<td>GEOP 6354</td>
<td>Seismology</td>
</tr>
<tr>
<td>GEOP 6356</td>
<td>Topics in Geophysics</td>
</tr>
<tr>
<td>GEOP 6357</td>
<td>Well Logging</td>
</tr>
<tr>
<td>GEOP 6460</td>
<td>Geop App-Digital Signal Proces</td>
</tr>
<tr>
<td>GEOP 6361</td>
<td>Plate Tectonics</td>
</tr>
</tbody>
</table>

**Comprehensive Examination:**

Complete Comprehensive Examination

**Dissertation:**

Dissertation I

& Dissertation II

**Total Hours**

60