

Master of Science in Geology

Administrative Unit

This program is administered by the Office of Graduate Studies and Research through the Faculty of Geology, Department of Physical Sciences, College of Arts and Sciences.

Objectives

- a. To capitalize on the world-class geology of west Texas as an outstanding laboratory for developing critical observational and interpretive skills.
- b. Mastery of the fundamentals in Geology at a professional level.
- c. To provide a broad background for students who wish to pursue a career in any of the geoscience fields.
- d. To prepare graduates to enter doctoral programs in the geological sciences.
- e. To prepare graduates for independent research in their chosen fields.

Admission Requirements

Regular graduate admission standards apply. In addition students are expected to have completed a standard undergraduate curriculum that includes the courses required for an undergraduate degree in geology at UT Permian Basin, as set forth in the undergraduate catalog. Students who lack any of these courses are required to complete them before starting any graduate-level course work.

Options

Students have a variety of choices in field areas, research topics, and coursework.

Core Requirements

The program leading to a Master of Science degree in Geology requires a minimum of 24 semester credit hours of course work in geology and supporting or ancillary fields, and six semester credit hours of original research resulting in a thesis. The curriculum of courses selected by each student, in consultation with the graduate faculty, will be chosen to enable them to develop their professional interests and achieve their career goals. Up to nine semester hours of 4000 level courses can be included in the graduate curriculum. Within two semesters the student should select an advisor, who together with the student, will choose a thesis committee, approve a thesis topic and confirm the course curriculum in accord with the current regulations of the Graduate School.

Candidates for the Master of Science degree in Geology must complete a thesis acceptable to the candidate's graduate committee and written in the style outlined in the U.S. Geological Survey's **Suggestion to Authors**, 7th edition. The thesis must also conform to rules established by the Graduate School at UT Permian Basin. After final approval of the thesis by the graduate committee the student must present a seminar on the thesis and defend its conclusions orally to the general faculty and representatives of the Graduate School.

Special Program Features

Special emphasis is placed on fieldwork and the submission of a thesis. The non-thesis option is not available. All courses have the following prerequisites: 1) graduate standing and 2) permission of the instructor.

Course Listings

GEOL 6305 Advanced Structural Geology and Tectonics (3)

Concepts and principles of structural geology and tectonics, with emphasis on physical factors responsible for the deformation of the earth's crust, and the results of the deformation through geologic time.

GEOL 6307 Carbonate Petrology, Petrography, and Diagenesis (3)

Study of the origins, grain types, textures, and diagenesis of recent and ancient carbonate sediments and rocks.

GEOL 6308 Carbonate Depositional Systems and Sequence Stratigraphy (3)

Study the marginal-marine, shallow- and deep-marine carbonate depositional environments and their sequence stratigraphic expression.

GEOL 6311 Clastic Petrology, Petrography, and Diagenesis (3)

Study of the origins, grain types, textures, and diagenesis of recent and ancient clastic, volcanoclastic, and biogenic sediments and rocks.

GEOL 6312 Clastic Depositional Systems and Sequence Stratigraphy (3)

Study of terrestrial, marginal-marine, shallow- and deep-marine clastic depositional environments and their sequence stratigraphic expression.

GEOL 6335 Arid-Lands Hydrology (3)

Study of hydrologic systems in arid and semi-arid environments.

GEOL 6344 Advanced Ore Deposits (3)

Detailed study of the geochemical controls, petrography, and field relationships of selected types of ore deposits.

GEOL 6347 Subsurface Methods (3)

Systematic and accurate acquisition, evaluation, and interpretation of subsurface data as applied in the search for oil and mineral deposits.

GEOL 6348 Petroleum Geology (3)

Advanced studies in petroleum exploration. Porosity and permeability as related to lithology and hydrodynamics of fluid flow. Stratigraphic and structural traps; regional trends and basin analysis; the origin of oil; log interpretation; and geophysical exploration.

GEOL 6355 Thermodynamics of Geologic Processes (3)

Thermodynamics applied to problems of igneous, sedimentary, and metamorphic petrology.

GEOL 6357 Volcanology

A study of the origins and eruptions of volcanoes, including surface and subsurface processes, undersea vents and potential application for thermal energy production.

GEOL 6358 Advanced Geochemistry (3)

Advanced studies of the geochemistry of igneous, sedimentary, and metamorphic rocks, as well as the distribution of trace elements in diverse environments.

GEOL 6389 Selected Topics (3)

Graduate courses which will be offered only once, will be offered infrequently or are being developed before a regular listing in the catalog.

GEOL 6699 Master's Thesis (6)

Meets the research requirements for the thesis option in master's degree programs.