

School of Natural Sciences and Mathematics

Geosciences (BS)

Attaining greater understanding of past and present Earth processes is the fundamental goal of geosciences. To achieve this goal the geoscientist studies the minerals, rocks, fluids, and fossils of the Earth and investigates the physical, chemical, and biological processes occurring on and in the Earth.

Professional opportunities in geology exist in the environmental, energy, and mineral resources industries and in government agencies concerned with these fields. In addition, many occupations concerned with law, management, economics, and the environment utilize a background in geosciences.

Specific degree plans will be formulated by the undergraduate advisor in Geosciences. Changing circumstances may require changes to the degree plans.

Bachelor of Science in Geosciences

[Degree Requirements](#) (120 semester credit hours)¹

[View an Example of Degree Requirements by Semester](#)

Faculty

FACG> nsm-geosciences-bs

Professors: John F. Ferguson, John W. Geissman, David Lumley, William I. Manton, Robert J. Stern

Professors Emeritus: Carlos L. V. Aiken, David E. Dunn, George A. McMechan, Richard M. Mitterer, Emile A. Pessagno Jr., Dean C. Presnall, Robert H. Rutherford

Associate Professor: Thomas H. Brikowski

Associate Professor Emeritus: James L. Carter

Assistant Professor: Hejun Zhu

Senior Lecturers: William R. Griffin, Ignacio Pujana, Prabin Shilpakar

I. Core Curriculum Requirements: 42 semester credit hours²

Communication: 6 semester credit hours

[COMM 1311](#) Survey of Oral and Technology-based Communication

[RHET 1302](#) Rhetoric

Mathematics: 3 semester credit hours

[MATH 2413](#) Differential Calculus^{3, 4}

or [MATH 2417](#) Calculus I^{3, 4}

Life and Physical Sciences: 6 semester credit hours

[CHEM 1311](#) General Chemistry I³

or [CHEM 1315](#) Honors Freshman Chemistry I³

[CHEM 1312](#) General Chemistry II³

or [CHEM 1316](#) Honors Freshman Chemistry II³

Language, Philosophy and Culture: 3 semester credit hours

Select any 3 semester credit hours from Language, Philosophy and Culture core courses (see advisor)

Creative Arts: 3 semester credit hours

Select any 3 semester credit hours from Creative Arts core courses (see advisor)

American History: 6 semester credit hours

Select any 6 semester credit hours from American History core courses (see advisor)

Government / Political Science: 6 semester credit hours

[GOVT 2305](#) American National Government

[GOVT 2306](#) State and Local Government

Social and Behavioral Sciences: 3 semester credit hours

Select any 3 semester credit hours from Social and Behavioral Sciences core courses (see advisor)

Component Area Option: 6 semester credit hours

[GEOS 1303](#) Physical Geology

[GEOS 1304](#) History of Earth and Life

II. Major Requirements: 62-75 semester credit hours

Major Preparatory Courses: 21-22 semester credit hours beyond Core Curriculum

Prerequisite courses to be completed before enrolling in upper-division GEOS courses.

[CHEM 1111](#) General Chemistry Laboratory I

or [CHEM 1115](#) Honors Freshman Chemistry Laboratory I

[CHEM 1112](#) General Chemistry Laboratory II

or [CHEM 1116](#) Honors Freshman Chemistry Laboratory II

[CHEM 1311](#) General Chemistry I₃

or [CHEM 1315](#) Honors Freshman Chemistry I₃

[CHEM 1312](#) General Chemistry II₃

or [CHEM 1316](#) Honors Freshman Chemistry II₃

[GEOS 1303](#) Physical Geology₃

[GEOS 1304](#) History of Earth and Life₃

[GEOS 1103](#) Physical Geology Laboratory

[GEOS 1104](#) History of Earth and Life Laboratory

[GEOS 2409](#) Rocks and Minerals

[MATH 2413](#) Differential Calculus_{3, 4}

or [MATH 2417](#) Calculus I_{3, 4}

[MATH 2414](#) Integral Calculus

or [MATH 2419](#) Calculus II

[PHYS 2325](#) Mechanics and [PHYS 2125](#) Physics Laboratory I

or [PHYS 2421](#) Honors Physics I - Mechanics and Heat⁵

[PHYS 2326](#) Electromagnetism and Waves

or [PHYS 2422](#) Honors Physics II - Electromagnetism and Waves

[PHYS 2126](#) Physics Laboratory II

Major Core Courses: 27 semester credit hours

[GEOS 2306](#) Essentials of Field Geologic Methods

[GEOS 3300](#) Field Geology I (Summer Field Camp I)

[GEOS 3421](#) Stratigraphy and Sedimentology

[GEOS 3464](#) Igneous and Metamorphic Petrology

[GEOS 3470](#) Structural Geology

[GEOS 4300](#) Field Geology II (Summer Field Camp II)

[GEOS 4320](#) The Physics and Chemistry of the Solid Earth

[GEOS 4390](#) Communication in the Geosciences

Students may select either the Geology Option or the Geophysics Option.

A. Geology Option: 14-15 semester credit hours

[GEOS 3434](#) Paleobiology

[GEOS 4322](#) The Earth System

[GEOS 4430](#) Hydrogeology and Aqueous Geochemistry

And select one mathematics course from the following:

[MATH 2415](#) Calculus of Several Variables

[MATH 2418](#) Linear Algebra

[MATH 2451](#) Multivariable Calculus with Applications

[PHYS 3330](#) Numerical Methods in Physics and Computational Techniques

B. Geophysics Option: 26 semester credit hours

[MATH 2418](#) Linear Algebra

[MATH 2420](#) Differential Equations with Applications

[MATH 2451](#) Multivariable Calculus with Applications

[MATH 4362](#) Partial Differential Equations

[PHYS 3411](#) Theoretical Physics

[PHYS 3312](#) Classical Mechanics

[PHYS 3416](#) Electricity and Magnetism

III. Elective Requirements: 3-16 semester credit hours (14-16 semester credit hours for Geology Option; 3-4 semester credit hours for Geophysics Option)

Both lower- and upper-division courses may count as electives, but students must complete at least 51 semester credit hours of upper-division courses to qualify for graduation. Students are strongly encouraged to take GEOS graduate courses as free electives.

NOTE> Please be advised, the UTeach section below feeds in from a separate page updated by the UTeach team. Any changes made to the UTeach section below will not be retained.

UTeach Option

The [UTeach option](#) may be added to either the BA or BS degree. UTeach Dallas Option degree plans are streamlined to allow students to complete both a rigorous Bachelor of Science or Bachelor of Arts degree and all coursework for middle or high school teacher certification in four years. Teaching Option degrees require deep content knowledge combined with courses grounded in the latest research on math and science education. While most graduates go on to classroom teaching, UTeach alums are also prepared to enter graduate school and to work in discipline related industry.

Fast Track Baccalaureate/Master's Degrees

The Fast-Track program allows students with strong academic records to take selected graduate courses that may be applied toward the baccalaureate degree and be used to satisfy requirements for the master's degree. Interested students who intend to pursue a master's degree in Geosciences may apply for a Fast Track baccalaureate/master's plan of study via the Geosciences graduate advisor. The planned coursework must be coordinated with the Geosciences undergraduate advisor; the Geosciences graduate advisor should also be notified. A maximum of 15 semester credit hours may be applied under this program.

1. Incoming freshmen must enroll and complete requirements of UNIV 1010 and the corresponding school-related freshman seminar course. Students, including transfer students, who complete their core curriculum at UT Dallas must take UNIV 2020.
2. Curriculum Requirements can be fulfilled by other approved courses from institutions of higher education. The courses listed are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at UT Dallas.
3. A Major requirement that also fulfills a Core Curriculum requirement.
4. Three semester credit hours are counted to fulfill the Mathematics Core Requirement with the remaining semester credit hour to be counted under the major requirements.
5. Students who complete PHYS 2421 do not need to complete PHYS 2125.

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