Geosciences, Teaching (BSGS)

Degree-Bachelor of Science in Geosciences (BSGS)

The Bachelor of Science in Geosciences (BSGS) serves as a professional degree for students planning careers as geologists, geophysicists, hydrologists, climate scientists, or teachers, as well as for those planning to pursue graduate work in geosciences or a profession such as law or business. Careers are available in the petroleum and related energy industries, resource evaluation, mineral exploration, geologic hazard monitoring, environmental control and reclamation, building foundation evaluation, groundwater contamination studies, soil testing, regional planning, watershed management, climate modeling, and college or secondary school teaching. Graduates may also work in state or federal agencies, in universities or museums, with consulting firms, or with service companies to the energy and mineral industries.

Degree requirements are divided into three categories:

1. university-wide undergraduate degree requirements (the University core curriculum),
2. prescribed work for the degree, and
3. major requirements. Taken together, these courses constitute a degree major, a degree plan with a particular concentration or emphasis. Thus, students may develop intellectually challenging yet different plans of study according to their personal interests and goals.

Students seeking the Bachelor of Science in Geosciences degree must choose one of five majors: General Geology, Geophysics, Hydrology and Water Resources, Climate System Science, or Geosciences.

Component Notes

- **Introduction to Earth and Planetary Science Component:** A introductory exposure to geosciences in the 21st Century and foundational techniques required to study processes on Earth and other planets.
- **Experiential Learning Component:** Courses that develop skills in observation, data gathering, and interpretation in the field and/or laboratory.
- **Disciplinary Breadth Component:** These courses that span all aspects of geosciences at a sophomore level and provide the foundation to pursue courses at the advanced level. All geoscience students regardless of major are required to take these courses that span from the interior planetary processes to the climate system.
- **Quantitative Analysis Component:** Courses that develop skills in the quantitative analysis of geosciences data and theories, including geostatistics, mathematics, numerical modeling, computer coding, and data analysis. The selection of courses includes courses where quantitative analysis of data and theories is the primary emphasis.
- **Geospatial Skills Component:** Courses that teach 3-D visualization and thinking skills and instruct in geospatial technologies and software.
- **Immersion Learning Component:** Intensive three week courses that require full time participation. Often, but not always, they occur off campus. Data acquisition and interpretation are a core component of these experiences.
- **Disciplinary Fundamentals Component:** Courses that survey the discipline at the advanced level, building upon introductory coursework, while also providing fundamental knowledge required for other advanced courses. Students will be guided through Areas of Study that are a suggested menu of courses for students interested in different aspects of Fundamentals appropriate for sub-disciplines and key topical subjects.

Major-Geosciences Teaching Concentration

The Geosciences Major, Teaching concentration is designed to fulfill the course requirements for composite science teacher certification for middle school or secondary with geological sciences as the primary teaching field. This major prepares students for science teaching certification in the state of Texas.

Admissions

Information about admissions to this program is given in the school's Admissions section.

Licensure

The program is part of the innovative UTeach program at UT Austin, which prepares students for science teaching certification in the state of Texas. This program prepares students for composite science teacher certification for middle school or secondary with geological sciences as the primary teaching field in the state of Texas.

Total Hours Required: 126

Teaching, Senior Grades

Plan of Study

The Plan of Study is a suggested four-year course sequence to support academic planning and serves as a helpful guide. Currently enrolled students should meet with their academic advisor to tailor their course selections and timelines to their individual goals and circumstances.

Course	Title	Hours
Year 1		
Semester 1		
GEO 401	Physical Geology	4
M 408C	Differential and Integral Calculus	4
CH 301	Principles of Chemistry I	3
UTS 101	Secondary Teacher Education Preparation: Step 1	1
First-Year Signature Course (090)		3
RHE 306	Rhetoric and Writing	3
	Hours	**18**
Semester 2		
GEO 405	Life through Time	4
BIO 311C	Introductory Biology I	3
CH 302	Principles of Chemistry II	3
UTS 110	Secondary Teacher Education Preparation: STEP 2	1
Humanities (040)		3
American and Texas Government (070)		3
	Hours	**17**
Year 2		
Semester 1		
GEO 416E	Solid Earth Processes	4
GEO 416S	Earth and Planetary Processes Through Time	4
BIO 311D	Introductory Biology II	3
Science elective		3
U.S. History (060)		3
	Hours	**17**
Semester 2		
GEO 420K	Introduction to Field and Stratigraphic Methods	4

HIS 329U or PHL 329U	Perspectives on Science and Mathematics or Perspectives on Science and Mathematics	3
EDC 365C or UTS 350	Knowing and Learning in Math and Science or Knowing and Learning in Math and Science	3
Upper-division GEO course		4
U.S. History (060)		3
	Hours	**17**
Year 3		
Semester 1		
PHY 303L	Engineering Physics II	3
PHY 105N	Laboratory For Physics 302L, 303L, and 317L	1
EDC 365D or UTS 355	Classroom Interactions or Classroom Interactions	3
Hours chosen from:		3
BIO 337.2	Research Methods: UTeach	
CH 368.1	Research Methods: UTeach	
PHY 341.7	Research Methods: UTeach	
Upper-division GEO course		4
Social and Behavioral Sciences (080)		3
	Hours	**17**
Semester 2		
EDC 365E or UTS 360	Project-Based Instruction or Project-Based Instruction	3
PHY 303K	Engineering Physics I	3
PHY 105M	Laboratory For Physics 302K, 303K, and 317K	1
American and Texas Government (070)		3
Upper-division GEO course		4
Free Elective		3
	Hours	**17**
Year 4		
Semester 1		
MNS 307	Introduction to Oceanography	3
Hours chosen from:		3
AST 303	Introduction to Astronomy with Celestial Observations	
AST 307	Introductory Astronomy	
AST 367M	Physical Science: Methods of Astronomy	
Visual and Performing Arts (050)		3
Upper-division Science elective		7
	Hours	**16**
Semester 2		
EDC 651S	Topics in Secondary School Teaching Practicum (any topic)	6
UTS 170	Student Teaching Seminar	1
	Hours	**7**
	Total Hours	**126**

Teaching, Middle Grades

Course	Title	Hours
Year 1		
Semester 1		
GEO 401	Physical Geology	4
M 408C	Differential and Integral Calculus	4
CH 301	Principles of Chemistry I	3
UTS 101	Secondary Teacher Education Preparation: Step 1	1
First-Year Signature Course (090)		3
RHE 306	Rhetoric and Writing	3
	Hours	**18**
Semester 2		
GEO 405	Life through Time	4
BIO 311C	Introductory Biology I	3
CH 302	Principles of Chemistry II	3
UTS 110	Secondary Teacher Education Preparation: STEP 2	1
Humanities (040)		3
American and Texas Government (070)		3
	Hours	**17**
Year 2		
Semester 1		
GEO 416E	Solid Earth Processes	4
GEO 416S	Earth and Planetary Processes Through Time	4
BIO 311D	Introductory Biology II	3
EDP 350G	Adolescent Development	3
U.S. History (060)		3
	Hours	**17**
Semester 2		
GEO 420K	Introduction to Field and Stratigraphic Methods	4
EDC 365C or UTS 350	Knowing and Learning in Math and Science or Knowing and Learning in Math and Science	3
HIS 329U or PHL 329U	Perspectives on Science and Mathematics or Perspectives on Science and Mathematics	3
Upper-division GEO course		4
U.S. History (060)		3
	Hours	**17**
Year 3		
Semester 1		
EDC 365D or UTS 355	Classroom Interactions or Classroom Interactions	3
PHY 303L	Engineering Physics II	3
PHY 105N	Laboratory For Physics 302L, 303L, and 317L	1
Hours chosen from:		3
BIO 337.2	Research Methods: UTeach	
CH 368.1	Research Methods: UTeach	
PHY 341.7	Research Methods: UTeach	
Upper-division GEO course		4
Social and Behavioral Sciences (080)		3
	Hours	**17**
Semester 2		
EDC 365E or UTS 360	Project-Based Instruction or Project-Based Instruction	3
EDC 339E	Secondary School Literacy across the Disciplines	3
PHY 303K	Engineering Physics I	3
PHY 105M	Laboratory For Physics 302K, 303K, and 317K	1
Upper-division GEO course		4
American and Texas Government (070)		3
	Hours	**17**
Year 4		
Semester 1		
MNS 307	Introduction to Oceanography	3
Hours chosen from:		3
AST 303	Introduction to Astronomy with Celestial Observations	
AST 307	Introductory Astronomy	
AST 367M	Physical Science: Methods of Astronomy	
Upper-division Science elective		7
Visual and Performing Arts (050)		3
	Hours	**16**
Semester 2		
EDC 651S	Topics in Secondary School Teaching Practicum (any topic)	6
UTS 170	Student Teaching Seminar	1
	Hours	**7**
	Total Hours	**126**

Requirements

All requirements are listed below, starting with the most specialized moving to the most general. Additional requirements may follow the table, so be sure to read the entire page. Some required courses listed below may also satisfy General Education requirements, including Core Curriculum.

Code	Title	Hours
Concentration		
Professional Development Sequence (a grade of at least C- is required for the hours below)		
EDC 651S	Topics in Secondary School Teaching Practicum	6
EDC 365C	Knowing and Learning in Math and Science	3
or UTS 350	Knowing and Learning in Math and Science	
EDC 365D	Classroom Interactions	3
or UTS 355	Classroom Interactions	
EDC 365E	Project-Based Instruction	3
or UTS 360	Project-Based Instruction	
UTS 101	Secondary Teacher Education Preparation: Step 1	1
UTS 110	Secondary Teacher Education Preparation: STEP 2	1
UTS 170	Student Teaching Seminar	1
Supporting Courses (a grade of at least C- is required for the hours below)		
Hours chosen from:		3
BIO 337.2	Research Methods: UTeach (Topic 2: Research Methods: UTeach)	
CH 368.1	Research Methods: UTeach (Topic 1: Research Methods: UTeach)	
PHY 341.7	Research Methods: UTeach (Topic 7: Research Methods: UTeach)	
HIS 329U	Perspectives on Science and Mathematics	3
or PHL 329U	Perspectives on Science and Mathematics	
Choose a sequence below:		3
Sequence 1:		
EDP 350G	Adolescent Development (required for middle grades certification)	
Sequence 2:		
PSY 301	Introduction to Psychology (required for middle grades certification)	
PSY 304	Introduction to Child Psychology (required for middle grades certification)	
EDC 339E	Secondary School Literacy across the Disciplines (required for middle grades certification)	3
Subtotal		*30*
Major		
M 408C	Differential and Integral Calculus	4
or M 408L	Integral Calculus	
Composite certification		
BIO 311C	Introductory Biology I	3
BIO 311D	Introductory Biology II	3
CH 301	Principles of Chemistry I	3
CH 302	Principles of Chemistry II	3
Choose a sequence below:		4
Sequence 1:		
PHY 303K	Engineering Physics I	
PHY 105M	Laboratory For Physics 302K, 303K, and 317K	
Sequence 2:		
PHY 303L	Engineering Physics II	
PHY 105N	Laboratory For Physics 302L, 303L, and 317L	
Enough additional approved coursework in biology, chemistry, or physics to provide the required 12 semester hours in a second field		
Hours chosen from:		3
AST 303	Introduction to Astronomy with Celestial Observations	
AST 307	Introductory Astronomy	
AST 367M	Physical Science: Methods of Astronomy	
MNS 307	Introduction to Oceanography	3
GEO 303	Introduction to Geology	3
OR		
GEO 401	Physical Geology	
GEO 405	Life through Time	4
GEO 416E	Solid Earth Processes	4
GEO 416S	Earth and Planetary Processes Through Time	4
GEO 420K	Introduction to Field and Stratigraphic Methods	4
Enough upper-division coursework to total at least 28 semester hours in geological sciences		
Subtotal		*45*
Degree		
Free electives: Additional coursework to reach total hours required.		9
Subtotal		*9*
General Education		
Core Curriculum		42
Foreign Language other than English, Beginning Proficiency		
Subtotal		*42*
College Requirements - Geosciences		
General University Requirements		
Total Hours		**126**

Additional Requirements and Policies

At least 12 hours in geological sciences must be completed in residence.

This program is designed to fulfill the course requirements for composite science teacher certification for middle school or secondary with geological sciences as the primary teaching field.

Students must meet the following requirements to graduate and be recommended for certification.

- University grade point average of at least 2.50
- Earned a grade of at least *C-* in each of the professional development courses and supporting courses as well as all coursework required for the geological sciences degree.
- Successful passing of final teaching portfolio review, conducted by the UTeach-Natural Sciences program. Information about the portfolio review and additional certification requirements is available from the UTeach-Natural Sciences academic advisor.
- Composite certification requires 24 semester hours of coursework in the primary field, 12 hours in a second field, and six hours each in two additional fields.

Students must adhere to the current certification requirements, even if they differ from those listed in the University catalog.

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A course in one prescribed work area may not also be used to fulfill the requirements of another prescribed work or major requirement.

A grade point average of at least 2.00 is required in geological sciences courses counted toward the major requirement.

Algebra courses at the level of Mathematics 301 or the equivalent may not be counted toward the total number of hours for the degree.

Course Grades: A grade of at least C- is required in each course used to fulfill any of the requirements for the degree. The official grade in a course is the last one made; however, if a student repeats a course and has two or more grades, all grades and all semester hours are used to calculate the University grade point average and to determine the student's scholastic eligibility to remain in the University and the student's academic standing in the Jackson School of Geosciences.

Individual degree(s) or degree options may contain course residency requirements in addition to University requirements. BSGS majors must complete at least 36 semester hours of upper-division coursework in residence at the University.