Geosciences Degree Program
GSCBS - General or Hydro

Overview of Program Goals

The geosciences are concerned with earth processes and the evolutionary history of the Earth. Geoscientists work to discover and develop natural resources such as groundwater, metals, and energy sources; to solve environmental problems including acid mine drainage and waste disposal; to predict geological events, such as earthquakes and volcanism; and to solve fundamental questions concerning the origin and evolution of Earth and life.

Our degree programs stress data collection; investigation, analysis and synthesis of information related to complex natural problems; rigor of thought and clarity of oral and written expression.

Degree Programs within the Department

The ***Bachelor of Science*** provides a broad foundation in the physical and natural sciences for students who seek immediate employment or post-graduate education in several areas of the geosciences. Examples of careers include the petroleum and mining industries, local or federal resource management; water resources, treatment and management; energy and environmental industries; and academia. A six-credit field experience and an independent research thesis are required of all students. The BS degree in Geosciences requires a minimum of 122 credits.

The BS degree has two program options. The General Option provides flexibility for students to focus on specialized areas in the geosciences. The Hydrogeology Option helps prepare students for entry-level positions in environmental agencies and firms that require knowledge of groundwater and related topics. The option is also appropriate for students wishing to pursue advanced training in hydrogeology.

REQUIREMENTS – Geosciences Bachelor of Science (GSCBS)

General Education requirements include Arts (GA), Humanities (GH), and Social Sciences (GS) (6 credits each), International and Intercultural Competence (US/IL: 6 credits) and Health and Physical Activity (GHS: 3 credits). General Education courses in Writing and Speaking (GWS: 6 credits) Natural Sciences (GN: 9 credits) and Quantification (GQ: 6 credits) are filled within the major.

Required Courses for the GSCBS – General Option

English 15	Rhetoric and composition **or** English 30 Honors freshman composition
English 202C	Technical writing **or** Speech Communications 100 Effective speech
EMSC 100S	EMS Freshman seminar (students who transfer to EMS and have not taken EMSC 100S must complete both English 202C **and** SpCom 100)
Math 140, 141	Calculus with analytical geometry
Biology 110	Basic concepts and biodiversity
Chemistry 110, 111	Chemical principles
Chemistry 112, 113	Experimental chemistry
Physics 211, 213	General physics **PLUS** two additional credits chosen from 212 (4 credits) or 214 (2 credits)

Required Geoscience Courses

Geoscience 001	Physical geology
Geoscience 201	Earth materials
Geoscience 202	Chemical processes
Geoscience 203	Physical processes
Geoscience 204	Geobiology
Geoscience 310	Earth history
Geoscience 465	Structural geology
Geoscience 472	Field study
Geoscience 494W	Senior thesis
Geoscience 496	Thesis research

Advanced Geoscience Electives

Select 15 credits from 300- and 400-level GEOSC courses

Supporting Courses

Select 3 credits of Computer Science, Mathematics [above MATH 141] or Statistics [200-level or above]

Select 9 credits supportive of the student's interests. Students may apply 6 credits of ROTC.

REQUIREMENTS – Geosciences Bachelor of Science (GSCBS)
HYDROGEOLOGY OPTION

General Education requirements are described under the Geosciences BS General Option

Required Courses for the GSCBS – Hydrogeology Option

English 15	Rhetoric and composition **or** English 30 Honors freshman composition
English 202C	Technical writing **or** Speech Communications 100 Effective speech
EMSC 100S	EMS Freshman seminar (students who transfer to EMS and have not taken EMSC 100S must complete both English 202C **and** SpCom 100)
Math 140, 141	Calculus with analytical geometry
Biology 110	Basic concepts and biodiversity
Chemistry 110, 111	Chemical principles
Chemistry 112, 113	Experimental chemistry
Physics 211, 213	General physics **PLUS** two additional credits from 212 (4 credits) or 214 (2 credits)

Required Geoscience Courses

Geoscience 001	Physical geology
Geoscience 201	Earth materials
Geoscience 202	Chemical processes
Geoscience 203	Physical processes
Geoscience 204	Geobiology
Geoscience 310	Earth history
Geoscience 452	Introduction to hydrogeology
Geoscience 465	Structural geology
Geoscience 472a/b	Field study
Geoscience 494W	Senior thesis
Geoscience 496	Thesis research

Supplementary Mathematics Select 3 credits from the following courses

Computer Science 201C	Computer programming in C
Computer Science 201F	Computer programming in FORTRAN
Computer Science 203	Programming with business applications
Statistics 200	Elementary statistics
Statistics 250	Introduction to biostatistics
Statistics 451	Introduction to applied statistics

Advanced Techniques Select 9 credits total from A and B. Select at least 3 credits from each category.

A.	Chemistry 34	Organic chemistry
	Chemistry 451	Physical chemistry
	Geoscience 412	Water resources geochemistry
	Geoscience 419	Organic geochemistry of natural waters
B.	Geoscience 340	Geomorphology
	Geoscience 439	Principles of stratigraphy
	Geoscience 454	Geology of oil and gas
	Geoscience 484	Geophysical surveying
	Geography 362	Image analysis

Soil Science Select 3 credits from the following courses

Soils 101	Introduction to soils
Soils 415	Soil morphology, mapping and land use
Ag Systems Mgt 327	Soil and water resource management

Supporting Courses

Select 8 credits supportive of the student's interest. Students may apply 6 credits of ROTC.