

Geology



Career Profile

Geology literally means “the study of the Earth.” The geologist, a combination detective and scientist, works outdoors as well as in the laboratory studying the formation of the Earth and its myriad of geological structures. Geologists use fossils to interpret the past; learn how wind, water, volcanoes, earthquakes, and glaciers continue to change the Earth; and locate natural resources.

The School of Mines program develops geologists for careers in geology including environmental applications, mineral and petroleum exploration, governmental agencies, museums, academic fields, and entrepreneurship. The basic undergraduate program also prepares individuals for graduate study in geology or related areas, either at the School of Mines or other world-class graduate schools.

Accreditation

The South Dakota School of Mines and Technology is accredited by the Higher Learning Commission of the North Central Association of Colleges and Secondary Schools, the recognized accrediting agency for the north central states. In 2006, the HLC voted to continue accreditation of the School of Mines. The School of Mines has been accredited since 1925.

Faculty

Chair: Dr. Maribeth Price

Professors: Mickelson Professor Dr. Arden Davis, Dr. Edward Duke, Dr. James Fox, Dr. Alvis Lisenbee, Dr. James Martin, and Dr. Colin Paterson

Associate Professor: Dr. Nuri Uzunlar

Assistant Professor: Dr. Gerald Grellet-Tinner and Dr. Michael Terry

Labs and Facilities

Analytical and computational facilities in the department and related departments include the electron microprobe, heating-cooling fluid inclusion stage, AA, ICP-MS, FTIR, Raman microscope, XRD, SEM, TEM, microcomputers, additional computers, and a state-of-the-art Geographic Information Systems (GIS)

and Remote Sensing Lab. The Museum of Geology provides students interested in paleontology an opportunity to learn the techniques of collection, preparation, interpretation, and display of fossil material.

Features and Strengths

The School of Mines is located on the edge of the beautiful Black Hills, where magnificent exposures of rock and structures are one of the major assets of the geology curriculum. The Badlands and the Black Hills are natural laboratories for hands-on studies of geologic processes and are used extensively for field trips.

Program Overview

The geology program provides a strong background in basic sciences and allows considerable variation in course choices depending on individual interests. The geology curriculum includes three areas of specialization including paleontology, geology/environmental, and earth systems science.

Program faculty members are experienced in a full range of geologic investigations, and teach classes in topics such as sedimentary geology, structural geology, geophysics, economic geology, mineralogy, paleontology, biostratigraphy, GIS, remote sensing, ground water, environmental geology, and engineering geology.

Outcomes

- School of Mines geology graduates received salary offers that average more than \$47,000.
- 89 percent of 2005-06 School of Mines geology graduates have found work in their field or have entered a graduate program within a year of graduation.
- 80 percent of graduates gain real-life experience through internships and co-ops.
- Companies hiring geology graduates include Wyoming State Engineers Office, AMWest Petroleum, Chicago Field Museum, Geo Tek Inc., SD Dept. of Environment and Natural Resources, and Wyoming State Engineers Office-water resources.

Student Organizations

Students at the School of Mines also have a variety of opportunities for extra-curricular activities that range from music, intramurals, and drama to ski and snowboarding clubs, and more than 75 other clubs and professional student organizations. These are important activities for our students and we encourage them to take full advantage of out-of-classroom events.

Geology students participate in the Society for Economic Geologists, the Paleontology Club, and go on regional and international field trips to places such as Hawaii, New Zealand, and Spain. Summer field camps are offered in the Black Hills of South Dakota as well as in Turkey.

Research

Research in the geology department includes the paleontology of mammals and dinosaurs, paleoecology, remote sensing of ore deposits, water quality protection, and uranium mining hazards. All seniors conduct an independent research project.

Curriculum Listing

<http://catalog.sdsmt.edu>

GEOLOGY CURRICULUM/CHECKLIST

Applied Geology Specialization

FRESHMAN YEAR

First Semester

MATH 123	Calculus I	4
CHEM 112	General Chemistry I	3
CHEM 112L	General Chemistry I Lab	1
ENGL 101	Composition I	3
GEOL 201	Physical Geology	3
GEOL 201L	Physical Geology Lab	1
IS 110	Explorations	2
TOTAL		17

Second Semester

CHEM 114	General Chemistry II	3
CHEM 114L	General Chemistry II Lab	1
MATH 125	Calculus II	4
PHYS 211	University Physics I	3
Humanities/Social Science Elective(s)		6
TOTAL		17

SOPHOMORE YEAR

First Semester

GEOL 331	Stratig and Sedimentation	3
MATH 225	Calculus III	4
PHYS 213	University Physics II	3
MEM 201	Surveying for Mineral Engineers	2
GEOL 321	Search For Our Past	3
TOTAL		15

Second Semester

ENGL 279	Technical Communications I	3
GEOL 212	Mineralogy and Crystallography	3
GEOE 211	Earth Systems Engr Analysis	1
PE	Physical Education	1
Gen Ed Humanities Elective(s)		6
PE	Physical Education	2
TOTAL		15

JUNIOR YEAR

First Semester

ENGL 289	Technical Communications II ¹	3
GEOL 341	Elementary Petrology	3
GEOL 416	GIS I: Intro to GIS	3
GEOL 461	Invertebrate Paleo	3
Free Elective		3
Humanities/Social Science Elective(s)		1
TOTAL		16

Second Semester

GEOE 322	Structural Geology	3
GEOL 403	Regional Field Geology	1
GEOE 324	Engr Geophysics I	3

For More Information contact:

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GEOL 442	Optical Petrology	2
Geology Elective(s)		3
TOTAL		12

Summer

GEOL 410	Field Geology	6
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SENIOR YEAR

First Semester

GEOL 464	Senior Research I	1
GEOE 475	Ground Water	3
GEOE 461	Petroleum Production	3
Free Elective(s)		3
Humanities/Social Science elective(s)		3
TOTAL		13

Second Semester

GEOE 482	Applied Geomorphology	3
GEOE 451	Economic Geology	3
GEOL 465	Senior Research II ²	3
Geology Elective(s) ³		3
Free electives		3
TOTAL		15

128 credits required for graduation

Specializations in Paleontology and Earth Systems Science are also available.