

# GEOLOGY (B.S.)

## Bachelor of Science Program

Program Code: BS-AS

Major Code: GEL

## Geosciences Department

160 Science and Math Complex

(716) 878-6731

[geosciences.buffalostate.edu/](http://geosciences.buffalostate.edu/) (<http://geosciences.buffalostate.edu/>)

**Professional Licensure:** This program leads to a recommendation for NYS certification; please check for certification requirements in all other states (<https://academicaffairs.buffalostate.edu/professional-licensure-disclosures/>)

The Geology program offers students a variety of opportunities to investigate the materials that constitute and the processes that shape the earth. Classroom, laboratory, and field work provide a base for careers related to energy, the environment, and the exploration for petroleum and mineral resources. Graduates of the program are prepared to enter these fields and/or pursue advanced study in the geosciences. The Geology program includes all of the coursework necessary for graduates to be eligible for obtaining a New York State license as a Professional Geologist.

Student majors are strongly encouraged to pursue independent research under faculty supervision and/or an internship experience. Students may find additional information about undergraduate research possibilities from faculty and by visiting the Office of Undergraduate Research Web site at [undergraduateresearch.buffalostate.edu/](http://undergraduateresearch.buffalostate.edu/) (<http://undergraduateresearch.buffalostate.edu/>).

A departmental honors program also is available. Students should contact the department for additional information.

## Program Requirements

Code	Title	Credit Hours
General Education 23 Requirements ( <a href="http://ecatalog.buffalostate.edu/undergraduate/collegewide-degree-requirements-baccalaureate-degrees/#IF_Courses">http://ecatalog.buffalostate.edu/undergraduate/collegewide-degree-requirements-baccalaureate-degrees/#IF_Courses</a> )		
33 credit hours		33
<b>Geology Major Requirements (67-75 credit hours)</b>		
<i>Required GES courses (39-40 credit hours)</i>		
At least 7 credit hours from the following:		7-8
GES 200	FIRST YEAR GEOLOGY EXPERIENCE	

GES 201	PHYSICAL GEOLOGY	
GES 202	EARTH AND ENVIRONMENTS THROUGH TIME	
All of the following courses (34 credit hours)		
GES 303	MINERALOGY	4
GES 306	SEDIMENTOLOGY AND STRATIGRAPHY	4
GES 307	GEOMORPHOLOGY	4
GES 323	THIRD- YEAR RESEARCH AND FIELD METHODS EXPERIENCE	3
GES 401	IGNEOUS AND METAMORPHIC PETROLOGY	4
GES 408	STRUCTURAL GEOLOGY	4
GES 418	STRUCTURAL GEOLOGY FIELD EXPERIENCE	1
GES 428	GEOLOGICAL HAZARDS	3
GES 452	HYDROGEOLOGY	3
GES 472	GEOLOGY SENIOR SEMINAR	3
Required Cognate Courses (27-34 credit hours)		27-34
Chemistry (8 credit hours)		
CHE 111 & CHE 113	FUNDAMENTALS OF CHEMISTRY I and LABORATORY FOR FUNDAMENTALS OF CHEMISTRY I	
CHE 112 & CHE 114	FUNDAMENTALS OF CHEMISTRY II and LABORATORY FOR FUNDAMENTALS OF CHEMISTRY II	
Physics (8-10 credit hours)		
PHY 107	GENERAL PHYSICS I or PHY 11UNIVERSITY PHYSICS I	
PHY 108	GENERAL PHYSICS II or PHY 11UNIVERSITY PHYSICS II	
Mathematics (5-10 credit hours)		
Choose one of the following combinations:		
<i>Combination 1:</i>		
MAT 124 & MAT 126	FUNCTIONS AND MODELING II and APPLIED CALCULUS I	
OR		
MAT 161	CALCULUS I	
<i>Combination 2:</i>		
MAT 124 & MAT 311	FUNCTIONS AND MODELING II and INTRODUCTORY PROBABILITY AND STATISTICS	

*Combination 3:*

MAT 126 APPLIED CALCULUS I  
& MAT 127 and APPLIED CALCULUS II

*Combination 4:*

MAT 161 CALCULUS I

AND

MAT 162 CALCULUS II

GIS Course (6 credit hours)

GEG 325 MAPS AND MAPMAKING  
USING GIS

GEG 425 FUNDAMENTALS OF GIS

**All College Electives** 13-22

**Total Credit Hours** 120

Students will:

1. demonstrate knowledge of fundamental concepts and principles of Geology
2. be able to work as part of a team and to communicate results
3. demonstrate critical thinking skills in Geology
4. be skilled in scientific writing, and use of geology literature
5. be able to collect, analyze and interpret field and laboratory data
6. be proficient in geology-used computer hardware and software