

EARTH SCIENCES (B.S.)

Bachelor of Science

Program Code: BS-AS

Major Code: EAS

Geosciences Department

160 Science and Math Complex

(716) 878-6731

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

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The Earth Sciences program offers students the opportunity to develop a broad understanding of the earth as a dynamic, interacting system of land, sea, atmosphere, and solar system. Coursework in chemistry, calculus, and physics are required, but more courses in these areas are expected, particularly for students intent upon careers in the geosciences, or contemplating graduate study.

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://](http://undergraduateresearch.buffalostate.edu/)undergraduateresearch.buffalostate.edu/). A departmental honors program also is available. Students should contact the department for additional information.

NOTE: Students seeking New York State Teacher Certification are advised to review the M.S.Ed. in Science Education degree program in the graduate catalog; this program requires completion of an undergraduate degree in a core science prior to admission. The program is designed to enable students to quickly and efficiently develop the knowledge and skills required for teaching and leads to initial NYS certification for those candidates meeting the program admission requirements. Contact the department for advisement on the quick admission and 4+1 pathways available for Buffalo State students.

Program Requirements

Code	Title	Credit Hours
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General Education 23 Requirements (http://ecatalog.buffalostate.edu/undergraduate/collegewide-degree-requirements-baccalaureate-degrees/#IF_Courses)

33 credit hours 33

Earth Science Major Requirements (58-63 credit hours)

Required GES Courses (45-46 credit hours)

Select 6 credit hours from the following: 6

GES 101	INTRODUCTORY GEOLOGY	
GES 102	HISTORICAL GEOLOGY	
GES 111	OCEANOGRAPHY	
GES 123	ENVIRONMENTAL EARTH SCIENCE	
GES 124	NATURAL HAZARDS	
GES 132	THE SOLAR SYSTEM	
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 (26 credit hours):		
GES 131	INTRODUCTORY ASTRONOMY	3
GES 241	METEOROLOGY	3
GES 303	MINERALOGY	4
GES 306	SEDIMENTOLOGY AND STRATIGRAPHY	4
GES 307	GEOMORPHOLOGY	4
GES 408	STRUCTURAL GEOLOGY	4
GES 418	STRUCTURAL GEOLOGY FIELD EXPERIENCE	1
GES 428	GEOLOGICAL HAZARDS	3
Select 6 credit hours from the following:		6
Upper-division Astronomy (3 credit hours)		
GES 323	THIRD- YEAR RESEARCH AND FIELD METHODS EXPERIENCE	
GES 452	HYDROGEOLOGY	
Select one (3 credit hours)		3
GES 431	PLANETARIUM SEMINAR	
GES 472	GEOLOGY SENIOR SEMINAR	
<i>Required Cognate Courses (13-17 credit hours)</i>		13-17
CHE 111 & CHE 113	FUNDAMENTALS OF CHEMISTRY I and LABORATORY FOR FUNDAMENTALS OF CHEMISTRY I	
Select one of the following (3-5 credit hours)		3-5
PHY 107	GENERAL PHYSICS I	
PHY 111	UNIVERSITY PHYSICS I	
BIO 104	ENVIRONMENTAL BIOLOGY	
BIO 111	FOUNDATIONS OF BIOLOGY	
BIO 210		
BIO 213	INTRODUCTION TO ECOLOGY, EVOLUTION, AND BEHAVIOR	

Mathematics (3-5 credit hours)	3-5
Choose one of the following:	
MAT 124	FUNCTIONS AND MODELING II
MAT 126	APPLIED CALCULUS I
MAT 161/163	CALCULUS I
GIS Course (3 credit hours)	3
GEG 325	MAPS AND MAPMAKING USING GIS
All College Electives	
19-29 credit hours	19-29
Total Credit Hours	120

Students will demonstrate:

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