

# GEOSCIENCE B.S.

## Program Requirements

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## Minimum Requirements for Geoscience, B.S.: 123 credits

### CONCENTRATIONS: GEOLOGY (P. 1), PALEONTOLOGY (P. 2), GEOSPATIAL SCIENCES (P. 2) AND GEOPHYSICS (P. 1)

Students must earn a C- grade or better in each course.

Code	Title	Credits
<b>General University Requirements</b>		
Complete the general university requirements. ( <a href="http://catalog.uaf.edu/bachelors/#gurbachelorsdegreestext">http://catalog.uaf.edu/bachelors/#gurbachelorsdegreestext</a> )		
<b>General Education Requirements</b>		
Complete the general education requirements. ( <a href="http://catalog.uaf.edu/bachelors/#generaleducationrequirementstext">http://catalog.uaf.edu/bachelors/#generaleducationrequirementstext</a> )		36-40
As part of the general education requirements, complete the following:		
CHEM F105X	General Chemistry I	
MATH F251X	Calculus I	
<b>B.S. Degree Requirements</b>		
Complete the B.S. degree requirements. ( <a href="http://catalog.uaf.edu/bachelors/#bachelorofsciencetext">http://catalog.uaf.edu/bachelors/#bachelorofsciencetext</a> )		15
<b>Geoscience Program Requirements</b>		
Complete the following:		
GEOS F101X	The Dynamic Earth	4
GEOS F112X	The History of Earth and Life	4
GEOS F309	Tectonics	3
<b>Concentration</b>		
Complete one of the following:		61-71
Geology		
Geophysics		
Geospatial Sciences		
Paleontology		
<b>Total Credits</b>		<b>123-137</b>

## Concentrations

### GEOLOGY

Code	Title	Credits
<b>Geology Concentration Requirements</b>		
Complete the following:		
CHEM F106X	General Chemistry II	4
GEOS F213	Mineralogy	4
GEOS F214	Petrology and Petrography	4
GEOS F225	Field and Computer Methods in Geology	2
GEOS F304	Geomorphology	3

GEOS F314	Structural Geology	4
GEOS F315	Paleobiology and Paleontology	4
GEOS F322	Stratigraphy and Sedimentation	4
GEOS F430	Statistics and Data Analysis in Geology	3
GEOS F454	Field Geology <sup>1,2</sup>	6
PHYS F123X	College Physics I	4
PHYS F124X	College Physics II	4
STAT F200X	Elementary Statistics	3
or STAT F300	Statistics	
Complete 12 additional credits of upper-division GEOS courses or other upper-division courses approved by the undergraduate advisor including one course from the following:		12
GEOS F483	Research Design, Writing and Presentation Methods	
GEOS F488	Undergraduate Research	
<b>Total Credits</b>		<b>61</b>

<sup>1</sup> GEOS F454 is offered at UAF during the summer of odd-numbered years. Students may substitute a 6-credit field geology class at another institution. The geology and geophysics undergraduate advisor will assist students in placement in an approved field geology class.

<sup>2</sup> Fulfills the baccalaureate capstone requirement.

### GEOPHYSICS

Code	Title	Credits
<b>Geophysics Concentration Requirements</b>		
Complete the following:		
GEOS F262	Rocks and Minerals	3
GEOS F375	Oral Communication Skills for Geoscientists	1
GEOS F406	Volcanology	3
GEOS F419	Solid Earth Geophysics	3
GEOS F431	Foundations of Geophysics	4
GEOS F477	Ice in the Climate System	3
GEOS F483	Research Design, Writing and Presentation Methods	3
GEOS F488	Undergraduate Research <sup>2</sup>	2
MATH F252X	Calculus II	4
MATH F253X	Calculus III	4
MATH F302	Differential Equations	3
MATH F314	Linear Algebra	3
PHYS F211X	General Physics I	8
and PHYS F212X	and General Physics II	
PHYS F213X	Elementary Modern Physics	4
PHYS F220	Introduction to Computational Physics	4
Complete two of the following science and engineering electives or undergraduate advisor-approved substitute:		6-8
ES F331	Mechanics of Materials	
ES F341	Fluid Mechanics	
GEOS F314	Structural Geology	
GEOS F322	Stratigraphy and Sedimentation	
GEOS F422	Geoscience Applications of Remote Sensing	

ME F441	Heat and Mass Transfer	
PHYS F301	Introduction to Mathematical Physics	
PHYS F341	Classical Physics I: Particle Mechanics	

Complete 6 additional credits of upper-division GEOS courses or other upper-division courses approved by the undergraduate advisor. 6

**Total Credits** 64-66

<sup>2</sup> Fulfills the baccalaureate capstone requirement.

## GEOSPATIAL SCIENCES

Code	Title	Credits
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### Geospatial Sciences Concentration Requirements

Complete the following:

CHEM F106X	General Chemistry II	4
GEOS F213	Mineralogy	4
GEOS F214	Petrology and Petrography	4
GEOS F225	Field and Computer Methods in Geology	2
GEOS F304	Geomorphology	3
GEOS F309	Tectonics	3
GEOS F422	Geoscience Applications of Remote Sensing	3
GEOS F430	Statistics and Data Analysis in Geology	3
GEOS F454	Field Geology <sup>1,2</sup>	6
NRM F338	Introduction to Geographic Information Systems	3
PHYS F123X	College Physics I	4
PHYS F124X	College Physics II	4
STAT F200X or STAT F300	Elementary Statistics Statistics	3

### Electives

Complete at least three of the following: 7-10

GEOS F458	Big Geospatial Data	
GEOS F459	Visible and Infrared Remote Sensing	
GEOS F488	Undergraduate Research	
NRM F435	GIS Analysis	
NRM F641	Natural Resource Applications of Remote Sensing	

Complete 13 additional credits of upper-division courses approved by the undergraduate advisor including two courses from the following: 13

GEOS F314	Structural Geology	
GEOS F315	Paleobiology and Paleontology	
GEOS F317	Paleontological Research and Laboratory Methods	
GEOS F322	Stratigraphy and Sedimentation	
GEOS F482	Geoscience Seminar	
GEOS F483	Research Design, Writing and Presentation Methods	
GEOS F460	The Dynamic Alaska Coastline	
MATH F314	Linear Algebra	

**Total Credits** 66-69

<sup>1</sup> GEOS F454 is offered at UAF during the summer of odd-numbered years. Students may substitute a 6-credit field geology class at another institution. The geology and geophysics undergraduate advisor will assist students in placement in an approved field geology class.

<sup>2</sup> Fulfills the baccalaureate capstone requirement.

## PALEONTOLOGY

Code	Title	Credits
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### Paleontology Concentration Requirements

Complete the following:

CHEM F106X	General Chemistry II	4
GEOS F213	Mineralogy	4
GEOS F214	Petrology and Petrography	4
GEOS F225	Field and Computer Methods in Geology	2
GEOS F314	Structural Geology	4
GEOS F315	Paleobiology and Paleontology	4
GEOS F317	Paleontological Research and Laboratory Methods	2
GEOS F322	Stratigraphy and Sedimentation	4
GEOS F454	Field Geology <sup>1,2</sup>	6
GEOS F430	Statistics and Data Analysis in Geology	3
PHYS F123X	College Physics I	4
STAT F200X or STAT F300	Elementary Statistics Statistics	3

Complete at least two from the following electives: 5-7

GEOS F453	Palynology and Paleopalynology	
GEOS F485	Mass Extinctions, Neocatastrophism and the History of Life	
GEOS F486	Vertebrate Paleontology	
GEOS F488	Undergraduate Research	

Complete the requirements for a minor in biological sciences 20

**Total Credits** 69-71

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<sup>2</sup> Fulfills the baccalaureate capstone requirement.