

MAJOR IN GEOLOGY, GEOLOGY CONCENTRATION

(<https://catalog.colostate.edu/general-catalog/colleges/natural-resources/geosciences/geosciences-major/geology-concentration/>).

Requirements Effective Fall 2025

Students are no longer being admitted into this concentration. Interested students should visit the Major in Geosciences, Geology Concentration

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
GEOL 150 ¹	Dynamic Earth (GT-SC2)	3A	4
GEOL 154	Earth and Climate Change Through Time		4
GEOL 192	New Student Seminar--Exploring Geosciences		1
MATH 160 ²	Calculus for Physical Scientists I (GT-MA1)	1B	4
1C (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc)		1C	3
Social and Behavioral Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioural-sciences)		3C	3
Elective			3
Total Credits			30

Sophomore

CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
GEOL 310	Earth Materials		4
GEOL 311	Earth's Interior		3
GEOL 312	Earth's Surface		2
GEOL 313	Earth Systems		2
GEOL 314	Earth's Surface Laboratory		1
MATH 161 ³	Calculus for Physical Scientists II (GT-MA1)	1B	4
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Strategic Writing and Communication (GT-CO3)	2	
Select one course from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
Historical Perspectives (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)		3D	3
Total Credits			31

Junior

GEOL 344	Stratigraphy and Sedimentology	4A	4
GEOL 364	Igneous and Metamorphic Petrology		3
GEOL 372	Structural Geology	4B	4
GEOL 376	Geologic Field Methods	4A,4C	3
NR 319	Introduction to Geospatial Science		4
Select one course from the following:			3-4
MATH 340	Intro to Ordinary Differential Equations		
STAT 301	Introduction to Applied Statistical Methods		
STAT 315	Intro to Theory and Practice of Statistics		

Arts and Humanities (<https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/> 3B #arts-humanities) 3

Elective 2-3

Total Credits 27

Summer

GEOL 436	Geology Summer Field Course	4C	6
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Total Credits 6

Senior

Select a minimum of 15 credits from the following Technical Electives. A minimum of 9 credits must be from the GEOL subject code: 15

ATS 440/GES 440	Sea Level Rise and a Sustainable Future
CHEM 245	Fundamentals of Organic Chemistry
CHEM 335	
CHEM 341	Modern Organic Chemistry I
CHEM 473	
CHEM 474	
CIVE 322	Basic Hydrology
CIVE 440	Nonpoint Source Pollution
CIVE 529	Environmental Organic Chemistry
DSCI 335	Inferential Reasoning in Data Analysis
GR 323/NR 323	Remote Sensing and Image Interpretation
GEOL 332	Optical Mineralogy
GEOL 340	Glacial Geology
GEOL 342	Paleontology
GEOL 343	Dinosaur Paleontology Field Camp
GEOL 366	Low-Temperature Geochemistry
GEOL 401	Geology of the Rocky Mountain Region
GEOL 415	Critical Zone Science
GEOL 440	Geodetic and Near-Surface Geophysical Methods
GEOL 442	Applied Geophysics
GEOL 446	Environmental Geology
GEOL 447	Mineral Deposits
GEOL 452	Hydrogeology
GEOL 454	Geomorphology
MATH 261	Calculus for Physical Scientists III
MATH 340	Intro to Ordinary Differential Equations
MATH 369	Linear Algebra I
NR 300	Biological Diversity
NR 400	Public Communication in Natural Resources
NR 422	GIS Applications in Natural Resource Management
NR 426	Programming for GIS I
NR 427	Programming for GIS II
NR 450	Geospatial Project Design and Analysis
NR 453	Geospatial Field Methods in Natural Resources
NR 503/GR 503	Remote Sensing and Image Analysis
PH 314	Introduction to Modern Physics
PH 361	Physical Thermodynamics
SOCR 440	Pedology and Soil Survey
SOCR 455	Microbiomes of Soil Systems
SOCR 470	Soil Physics
STAT 315 ⁴	Intro to Theory and Practice of Statistics

WR 406	Seasonal Snow Environments	
WR 416	Land Use Hydrology	
WR 418	Land Use and Water Quality	
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3
Electives ⁵		8
Total Credits		26
Program Total Credits:		120

¹ GEOL 110, GEOL 120, GEOL 122 or GEOL 124 in combination with GEOL 121 may be substituted for GEOL 150.

² MATH 155 may be substituted for MATH 160.

³ Students who substituted MATH 155 for MATH 160 should substitute MATH 255 for MATH 161.

⁴ STAT 315 can be used to fulfill the Technical Elective requirement if not taken for the Statistics requirement in Junior year.

⁵ Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)	X		1A	3
GEOL 150	Dynamic Earth (GT-SC2)	X		3A	4
GEOL 192	New Student Seminar--Exploring Geosciences	X			1
Social and Behavioral Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioural-sciences)			X	3C	3
Elective			X		3
Total Credits					14

Semester 2		Critical	Recommended	AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
GEOL 154	Earth and Climate Change Through Time	X			4
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
1C (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc)		X		1C	3
CO 150 and MATH 160 must be completed by the end of Semester 2.					
Total Credits					16

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
CHEM 113	General Chemistry II	X			3
CHEM 114	General Chemistry Lab II	X			1
GEOL 310	Earth Materials	X			4
GEOL 311	Earth's Interior	X			3
Historical Perspectives (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)			X	3D	3
Total Credits					14

Semester 4		Critical	Recommended	AUCC	Credits
GEOL 312	Earth's Surface	X			2
GEOL 313	Earth Systems	X			2
GEOL 314	Earth's Surface Laboratory	X			1
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
Select one course from the following:			X		3
CO 300	Writing Arguments (GT-CO3)			2	
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
JTC 300	Strategic Writing and Communication (GT-CO3)			2	

Select one course from the following			X		5
PH 121	General Physics I (GT-SC1)			3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)			3A	
Total Credits					17
Junior					
Semester 5		Critical	Recommended	AUCC	Credits
GEOL 344	Stratigraphy and Sedimentology	X		4A	4
NR 319	Introduction to Geospatial Science		X		4
Select one course from the following:		X			3-4
MATH 340	Intro to Ordinary Differential Equations				
STAT 301	Introduction to Applied Statistical Methods				
STAT 315	Intro to Theory and Practice of Statistics				
Elective					2-3
Total Credits					14
Semester 6		Critical	Recommended	AUCC	Credits
GEOL 364	Igneous and Metamorphic Petrology	X			3
GEOL 372	Structural Geology	X		4B	4
GEOL 376	Geologic Field Methods	X		4A,4C	3
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-and-humanities)			X	3B	3
CHEM 113 must be completed by the end of Semester 6.		X			
Total Credits					13
Semester 7		Critical	Recommended	AUCC	Credits
GEOL 436	Geology Summer Field Course	X		4C	6
Total Credits					6
Senior					
Semester 8		Critical	Recommended	AUCC	Credits
Technical Electives (See list on Concentration Requirements tab)		X			9
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)			X	3B	3
Elective					2
STAT 301 or STAT 315 or MATH 340 must be completed by the end of Semester 8.		X			
Total Credits					14
Semester 9		Critical	Recommended	AUCC	Credits
Technical Electives (See list on Concentration Requirements tab)		X			6
Electives		X			6
The benchmark courses for the 9th semester are the remaining courses in the entire program of study.		X			
Total Credits					12
Program Total Credits:					120