

# MAJOR IN GEOLOGY, ENVIRONMENTAL GEOLOGY CONCENTRATION

## Requirements Effective Fall 2023

### 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 <sup>1</sup>	Physical Geology for Scientists and Engineers	3A	4
GEOL 154	Historical and Analytical Geology		4
Select one course from the following:			3-4
MATH 159	One Year Calculus IB (GT-MA1)	1B	
MATH 160 <sup>2</sup>	Calculus for Physical Scientists I (GT-MA1)	1B	
Arts and Humanities ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities</a> )			3
Diversity, Equity, and Inclusion ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion</a> )			3
Historical Perspectives ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives</a> )			3
<b>Total Credits</b>			<b>28-29</b>

### Sophomore

CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
GEOL 232	Mineralogy		3
GEOL 344	Stratigraphy and Sedimentology	4A	4
GEOL 364	Igneous and Metamorphic Petrology	4B	4
MATH 161	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	
Social and Behavioral Sciences ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences</a> )			3
<b>Total Credits</b>			<b>30</b>

### Junior

GEOL 366	Sedimentary Petrology and Geochemistry	4A,4B	4
GEOL 372	Structural Geology	4B	4
GEOL 376	Geologic Field Methods	4A,4C	3
SOCR 240	Introductory Soil Science		4
Select one course from the following:			4
NR 319	Introduction to Geospatial Science		

NR 322	Intro. to Geographic Information Systems		3-5
Select one course from the following:			
PH 122	General Physics II (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
SOCR 470	Soil Physics		
Select one course from the following:			
MATH 340	Intro to Ordinary Differential Equations		3-4
STAT 301	Introduction to Applied Statistical Methods		
STAT 315	Intro to Theory and Practice of Statistics		
Arts and Humanities ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities</a> )			3B
<b>Total Credits</b>			<b>28-31</b>
<b>Summer</b>			
GEOL 436	Geology Summer Field Course	4C	6
<b>Total Credits</b>			<b>6</b>
<b>Senior</b>			
GEOL 446	Environmental Geology		3
GEOL 452	Hydrogeology		4
GEOL 454	Geomorphology		4
WR 416	Land Use Hydrology		3
Directed Technical Electives (See list below):			6
Electives <sup>3</sup>			4-8
<b>Total Credits</b>			<b>24-28</b>
<b>Program Total Credits:</b>			<b>120</b>

## Directed Technical Electives

Code	Title	Credits
<b>Select a minimum of 6 credits from a minimum of two courses:</b>		
AREC 342	Water Law, Policy, and Institutions	3
BZ 471 & BZ 472	Stream Biology and Ecology and Stream Biology and Ecology Laboratory	4
CIVE 322	Basic Hydrology	3
CIVE 413	Environmental River Mechanics	3
CIVE 440	Nonpoint Source Pollution	3
CIVE 455	Applications in Geotechnical Engineering	3
CIVE 529	Environmental Organic Chemistry	3
CIVE 538	Aqueous Chemistry	3
ECON 340/AREC 340	Introduction-Economics of Natural Resources	3
GEOL 342	Paleontology	3
GEOL 442	Applied Geophysics	4
GEOL 447	Mineral Deposits	3
GEOL 498	Research <sup>4</sup>	1-6
GEOL 540	Petrophysics and Well Log Interpretation	3
GEOL 541	Geostatistics	2
GEOL 546	Sedimentary Basin Analysis	4
GEOL 548	Petroleum Geology	4
GEOL 551	Groundwater Modeling	3
GEOL 552	Advanced Topics in Hydrogeology	2-3
GEOL 553	Use of Tracers in Hydrogeology	3

GR 410	Climate Change: Science, Policy, Implications	3
MATH 261	Calculus for Physical Scientists III	4
MATH 340	Intro to Ordinary Differential Equations	4
MATH 369	Linear Algebra I	3
NR 323/GR 323	Remote Sensing and Image Interpretation <sup>5</sup>	3
NR 426	Programming for GIS I	2
NR 422	GIS Applications in Natural Resource Management <sup>5</sup>	4
NR 427	Programming for GIS II	2
NR 503/GR 503	Remote Sensing and Image Analysis	4
PHIL 565	Seminar in Environmental Philosophy	3
POLS 361	U.S. Environmental Politics and Policy	3
SOC 461	Water and Social Justice	3
SOCR 440	Pedology	4
SOCR 467	Soil and Environmental Chemistry	3
SOCR 470	Soil Physics <sup>6</sup>	3
STAT 315	Intro to Theory and Practice of Statistics <sup>7</sup>	3
WR 418	Land Use and Water Quality	3
WR 474	Snow Hydrology	3
WR 524/CIVE 524	Modeling Watershed Hydrology	3

<sup>1</sup> GEOL 120, GEOL 122, or GEOL 124 in combination with GEOL 121 may be substituted for GEOL 150.

<sup>2</sup> MATH 160 is recommended.

<sup>3</sup> 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).

- <sup>4</sup> A maximum of one credit may be counted toward Directed Technical Electives.
- <sup>5</sup> May only select one course from NR 323, GR 323, and NR 422 to fulfill the directed technical elective requirement.
- <sup>6</sup> May be selected as a Directed Technical Elective if not taken in the junior year to fulfill the physics requirement.
- <sup>7</sup> May be selected as a Directed Technical Elective if not taken in the junior year to fulfill the statistics requirement.