

EARTH AND SPATIAL SCIENCES (B.S.)

Required course work includes the university requirements (see regulation J-3 (<https://catalog.uidaho.edu/general-requirements-academic-procedures/j-general-requirements-baccalaureate-degrees/>)) and:

Code	Title	Hours
ENGL 317	Technical Writing II	3
MATH 143	College Algebra	3
STAT 251	Statistical Methods	3
GEOG 385	Foundations of GIS	3
Select one of the following:		4
GEOL 101 & 101L	Physical Geology and Physical Geology Lab	
GEOL 102 & 102L	Historical Geology and Historical Geology Lab	
GEOL 111 & 111L	Physical Geology for Science Majors and Physical Geology for Science Majors Lab	
PHYS 111 & 111L	General Physics I and General Physics I Lab	
GEOG 100 & 100L	Introduction to Planet Earth and Introduction to Planet Earth Lab	
Select one of the following:		4
GEOG 165	Human Geography	
GEOG 200	World Cultures and Globalization	
Options		
Select one of the following options:		41-47
Geological Sciences (p. 1)		
Hydrology and Climate (p. 1)		
Geography and Global Sustainability (p. 1)		
Total Hours		61-67

A. Geological Sciences Option

Code	Title	Hours
CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Laboratory	1
PHYS 111	General Physics I	3
or PHYS 211	Engineering Physics I	
PHYS 111L	General Physics I Lab	1
or PHYS 211L	Laboratory Physics I	
GEOL 249	Mineralogy and Optical Mineralogy	4
GEOL 302	Field Geology Methods	3
GEOL 324	Principles of Stratigraphy and Sedimentation	4
GEOL 326	Igneous and Metamorphic Petrology	4
GEOL 345	Structural Geology	4
GEOL 490	Geology Field Camp	3
or GEOL 489	Virtual Field Camp	
MATH 160	Survey of Calculus	4
or MATH 170	Calculus I	

MATH 175	Calculus II	3-4
or MATH 330	Linear Algebra	
Advisor Approved Electives in Geology		9
Total Hours		46-47

Courses to total 120 credits for this degree

B. Hydrology and Climate Option

Code	Title	Hours
GEOG 313	Global Climate Change	3
GEOG 401	Climatology	3
GEOG 424	Hydrologic Applications of GIS and Remote Sensing	3
GEOL 309	Ground Water Hydrology	3
GEOL 410	Groundwater Field Methods	3
GEOL 490	Geology Field Camp	3
or GEOL 489	Virtual Field Camp	
or GEOG 493	Senior Capstone in Geography	
HYDR 409	Quantitative Hydrogeology	3
HYDR 412	Environmental Hydrogeology	3
MATH 170	Calculus I	4
MATH 175	Calculus II	4
PHYS 211	Engineering Physics I	3
Select two electives from the following:		6-8
GEOL 361	Geology and the Environment	
GEOG 317	Tree Rings and Environmental Change	
GEOG 430	Climate Change Ecology	
GEOG 435	Climate Change Mitigation	
GEOL 431	Chemical Hydrogeology	
GEOL 435	Glaciology and the Dynamic Frozen Earth	
GEOL 474	Stable Isotopes in the Environment	
SOIL 450	Environmental Hydrology	
Total Hours		41-43

Courses to total 120 credits for this degree

C. Geography and Global Sustainability Option

Code	Title	Hours
GEOG 313	Global Climate Change	3
GEOG 420	Land, Resources, and Environment	3
or GEOG 330	Urban Geography	
SOIL 436	Principles of Sustainability	3
GEOG 435	Climate Change Mitigation	3
GEOG 390	Cartographic Design & Geovisualization	3
GEOG 493	Senior Capstone in Geography	3
GEOG 365	Geopolitics and Conflict	3
or GEOG 350	Sustainability of Global Development	
Choose 5 of the following:		15
GEOL 309	Ground Water Hydrology	
GEOG 317	Tree Rings and Environmental Change	
GEOL 335	Geomorphology	
GEOG 350	Sustainability of Global Development	

GEOL 361	Geology and the Environment	
GEOG 410	Biogeography	
HYDR 412	Environmental Hydrogeology	
GEOG 430	Climate Change Ecology	
GEOG 407	Spatial Analysis and Modeling	
GEOG 475	Intermediate GIS	
GEOL 424	Hydrologic Applications of GIS and Remote Sensing	
GEOG 479	GIS Programming	
GEOG 483	Remote Sensing IMAGE ANALYSIS/GIS Integration	
GEOL 212	Dinosaurs and Prehistoric Life	
GEOG 260	Introduction to Geopolitics	
GEOG 401	Climatology	
GEOL 474	Stable Isotopes in the Environment	
GEOL 462	Petroleum Systems and Stratigraphic Concepts	
GEOL 431	Chemical Hydrogeology	
Choose 2 supporting courses:		6-8
CHEM 111 & 111L	General Chemistry I and General Chemistry I Laboratory	
PHYS 111 & 111L	General Physics I and General Physics I Lab or PHYS 211 Engineering Physics I	
MATH 160	Survey of Calculus or MATH 170 Calculus I	
MATH 175	Calculus II	
STAT 431	Statistical Analysis	
ECON 446	International Economics or ECON 447 International Development Economics	
ECON 201	Principles of Macroeconomics or ECON 447 International Development Economics	
ECON 202	Principles of Microeconomics	
ECON 272	Foundations of Economic Analysis	
SOIL 450	Environmental Hydrology	
SOIL 444	Water Quality in the Pacific Northwest	
SOIL 448	Drinking Water and Human Health	
BE 453	Northwest Climate and Water Resources Change	
ENVS 415	Environmental Lifecycle Assessment	

Total Hours 42-44

Courses to total 120 credits for this degree

Geological Sciences Option

Fall Term 1		Hours
ENGL 101	Writing and Rhetoric I	3
MATH 143	College Algebra	3
(GEOL 101 AND GEOL 101L) OR (GEOL 111 AND GEOL 111L) OR (GEOL 102 AND GEOL 102L) OR (GEOG 100 AND GEOG 100L)		4
Social and Behavioral Ways of Knowing Course		3
Oral Communication Course		3
Hours		16
Spring Term 1		Hours
ENGL 102	Writing and Rhetoric II	3
CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Laboratory	1
GEOL 249	Mineralogy and Optical Mineralogy	4

MATH 160 OR MATH 170		4
Hours		15
Fall Term 2		Hours
GEOL 324	Principles of Stratigraphy and Sedimentation	4
GEOG 165	Human Geography or GEOG 200 or World Cultures and Globalization	3
(PHYS 111 AND PHYS 111L) OR (PHYS 211 AND PHYS 211L)		4
Geology, Major Elective Course		3
Hours		14
Spring Term 2		Hours
GEOL 345	Structural Geology	4
GEOG 385	Foundations of GIS	3
MATH 175	Calculus II or MATH 330 or Linear Algebra	4
Humanistic and Artistic Ways of Knowing Course		3
Hours		14
Summer Term 2		Hours
GEOL 302	Field Geology Methods	3
Hours		3
Fall Term 3		Hours
GEOL 326	Igneous and Metamorphic Petrology	4
ENGL 317	Technical Writing II	3
American Diversity Course		3
Elective Course		3
Hours		13
Spring Term 3		Hours
STAT 251	Statistical Methods	3
International Course		3
Elective Course		3
Elective Course		3
Elective Course		3
Hours		15
Summer Term 3		Hours
GEOL 490	Geology Field Camp	3
Hours		3
Fall Term 4		Hours
Geology, Major Elective Course		3
Geology, Major Elective Course		3
Humanistic and Artistic Ways of Knowing Course		3
Elective Course		3
Elective Course		3
Hours		15
Spring Term 4		Hours
Geology, Major Elective Course		3
Elective Course		3
Elective Course		3
Elective Course		3
Hours		12
Total Hours		120

Global Sustainability and Geography Option

Fall Term 1		Hours
ENGL 101	Writing and Rhetoric I	3
MATH 143	College Algebra	3
(GEOL 101 AND GEOL 101L) OR (GEOL 111 AND GEOL 111L) OR (GEOL 102 AND GEOL 102L) OR (GEOG 100 OR GEOG 100L)		4
Social and Behavioral Ways of Knowing Course		3
Oral Communication Course		3
Hours		16
Spring Term 1		Hours
ENGL 102	Writing and Rhetoric II	3
CHEM 111	General Chemistry I	3

CHEM 111L	General Chemistry I Laboratory	1
STAT 251	Statistical Methods	3
GEOG 165 or GEOG 200	Human Geography or World Cultures and Globalization	3
Geography, Major Elective Course		3
Hours		16
Fall Term 2		
MATH 170	Calculus I (Suggested Supporting Course)	4
GEOG 385	Foundations of GIS	3
(PHYS 111 AND PHYS 111L) OR (PHYS 211 AND PHYS 211L)		4
Humanistic and Artistic Ways of Knowing Course		3
Hours		14
Spring Term 2		
GEOG 365 or GEOG 350	Geopolitics and Conflict or Sustainability of Global Development	3
Geography, Major Elective Course		3
Elective Course		3
Elective Course		3
Elective Course		3
Hours		15
Fall Term 3		
ENGL 317	Technical Writing II	3
GEOG 313	Global Climate Change	3
GEOG 435	Climate Change Mitigation	3
Geography, Major Elective Course		3
Elective Course		3
Hours		15
Spring Term 3		
GEOG 390	Cartographic Design & Geovisualization	3
SOIL 436	Principles of Sustainability	3
Geography, Major Elective Course		3
Geography, Major Elective Course		3
International Course		3
Hours		15
Fall Term 4		
GEOG 420 or GEOG 330	Land, Resources, and Environment or Urban Geography	3
American Diversity Course		3
Supporting Class, Major Elective Course		3
Geography, Major Elective Course		3
Elective Course		2
Hours		14
Spring Term 4		
GEOG 493	Senior Capstone in Geography	3
Humanistic and Artistic Ways of Knowing Course		3
Elective Course		3
Elective Course		3
Elective Course		3
Hours		15
Total Hours		120

Hydrology and Climate Option

		Hours
Fall Term 1		
ENGL 101	Writing and Rhetoric I	3
MATH 143	College Algebra	3
(GEOL 101 AND GEOL 101L) OR (GEOL 111 AND GEOL 111L) OR (GEOL 102 AND GEOL 102L) OR (GEOG 100 AND GEOG 100L)		4
Social and Behavioral Ways of Knowing Course		3
Oral Communication Course		3
Hours		16
Spring Term 1		
ENGL 102	Writing and Rhetoric II	3

CHEM 111 & 111L	General Chemistry I and General Chemistry I Laboratory	4
GEOG 165 or GEOG 200	Human Geography or World Cultures and Globalization	3
MATH 170	Calculus I	4
Hours		14
Fall Term 2		
GEOL 309	Ground Water Hydrology	3
GEOG 313	Global Climate Change	3
MATH 175	Calculus II	4
PHYS 211 & 211L	Engineering Physics I and Laboratory Physics I	4
Hours		14
Spring Term 2		
STAT 251	Statistical Methods	3
GEOG 385	Foundations of GIS	3
GEOL/GEOG Course, Major Elective Course		3
Elective Course		3
Elective Course		3
Hours		15
Summer Term 2		
GEOL 302	Field Geology Methods	3
Hours		3
Fall Term 3		
ENGL 317	Technical Writing II	3
GEOL 410	Groundwater Field Methods	3
HYDR 409	Quantitative Hydrogeology	3
GEOG 424	Hydrologic Applications of GIS and Remote Sensing	3
Elective Course		3
Hours		15
Spring Term 3		
International Course		3
Humanistic and Artistic Ways of Knowing Course		3
Elective Course		3
Elective Course		4
Hours		13
Summer Term 3		
GEOL 490	Geology Field Camp	3
Hours		3
Fall Term 4		
GEOL/GEOG, Major Elective Course		3
American Diversity Course		3
Elective Course		3
Elective Course		3
Elective Course		1
Hours		13
Spring Term 4		
GEOG 493	Senior Capstone in Geography	3
GEOG 401	Climatology	3
HYDR 412	Environmental Hydrogeology	3
Humanistic and Artistic Ways of Knowing Course		3
Elective Course		2
Hours		14
Total Hours		120

The degree map is a guide for the timely completion of your curricular requirements. Your academic advisor or department may be contacted for assistance in interpreting this map. This map is not reflective of your academic history or transcript and it is not official notification of completion of degree or certificate requirements. Please contact the

Registrar's Office regarding your official degree/certificate completion status.

New Learning Outcomes:

"Core" learning outcomes for ESS degree common to all three options

1. Students will develop an understanding of geologic and human systems through the study of Earth and human processes that interact across a wide range of spatial and temporal scales.
2. Students will develop skills applicable to the collection, integration, analysis, and illustration of data for solving spatial and temporal problems
3. Students will develop skills for communicating fundamental concepts in their field and results from their own work, in both written and oral settings.

Option-specific learning outcomes:

Geological Sciences option:

1. Preparation for the National Association of State Boards of Geology (ASBOG) Fundamentals of Geology (FG) exam, the precursor to licensure as a Professional Geologist.
2. Ability to integrate and communicate understanding of the geologic sciences (e.g., mineralogy, petrology, stratigraphy, etc.) to develop testable hypotheses of the origin and evolution of geological terrains.

Hydrology and Climate option:

1. Comprehension of the hydrologic cycle and the ability to measure and interpret basic physical and biochemical aspects of water associated with hydrologic processes.
2. Ability to explain the physical nature of global climate change and the role of society in influencing and mitigating effects of climate change.

Global Sustainability and Geography option:

1. Understanding of geographic and spatial perspectives in the interaction between and sustainability of human and natural systems
2. The ability to use geospatial data to map and analyze spatial patterns and relationships with a wide variety of data types, including both natural and human systems.