

B.S. IN GEOSCIENCE - EARTH SYSTEMS CONCENTRATION

Curriculum

Code	Title	Credits
GENERAL EDUCATION REQUIREMENTS (https://catalog.wcupa.edu/undergraduate/general-education-requirements/)		
Academic Foundations		
	First Year Experience requirement	4
	English Composition requirement	6-7
	Mathematics requirement	3-4
	Interdisciplinary requirement	3
	Diverse Communities requirement	3
	Ethics requirement	3
Distributed Disciplinary Foundations		
	Science requirement	6-8
	Behavioral & Social Science requirement	6
	Humanities requirement	6
	Arts requirement	3
ADDITIONAL BACCALAUREATE REQUIREMENTS (https://catalog.wcupa.edu/undergraduate/general-education-requirements/)		
University Requirements		
	Writing Emphasis requirement	9
	Speaking Emphasis requirement	9
Degree Requirements		
	Capstone requirement	1-15
MAJOR REQUIREMENTS		
Major Core Courses		
ESS 101	Introduction to Geology	3
ESS 201	Field Geology	3
ESS 204	Historical Geology	3
ESS 301	Environmental Geochemistry	3
ESS 302	Mineralogy	3
ESS 331	Introduction to Paleontology	3
ESS 343	Geomorphology	3
ESS 405	Igneous and Metamorphic Petrology	3
ESS 420	Structural Geology	3
ESS 439	Hydrogeology	3
ESS 450	Sedimentation & Stratigraphy	3
Other Required Courses		
BIO 110	General Biology I	4
MAT 115	Algebra, Functions, and Trigonometry	3
or MAT 131	Precalculus	
or MAT 143	Brief Calculus	
or MAT 145	Calculus for the Life Sciences	
or MAT 161	Calculus I	
MAT 121	Introduction to Statistics I	3
CHE 103	General Chemistry I	3
CRL 103	General Chemistry I Lab	1
PHY 130	General Physics I	4
or PHY 170	Physics I	
ESS/SCB/ENV 102	Humans and the Environment	3
or SCB 210	The Origin of Life and the Universe	
ESS 311	Introduction to Astronomy	3

ESS 330	Introduction to Oceanography	3
ESS 370	Atmospheric Science	3
ESS 347	Earth & Space Science Seminar	1
ESS 447	Earth and Space Science Senior Seminar	1

Capstone Requirement

ESS 499	Geoscience Research Methods ¹	3
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Earth and Space Science Electives

Select any two ESS courses at the 300 or 400 level 6

Select other 200-400 level ESS electives to reach 120 credits

A grade of C- or better must be achieved for all required courses within the department including the required electives, as well as those in biology, chemistry, math, and physics.

Total Minimum Credits Required 120

¹ This course fulfills the Capstone requirement.

Accelerated B.S. in Geoscience - Earth Systems Concentration to M.S. in Geoscience Program

Any junior Geoscience-Earth Systems student with a 3.0 cumulative GPA or higher may substitute up to 9 graduate credits to satisfy the B.S. program.

Code	Title	Credits
Elective Courses		
Select from the courses below:		9
ESS 507	Geology of the Solar System	
ESS 532	Advanced Oceanography	
ESS 535	Remote Sensing	
ESS 542	Geophysics	
ESS 544	Geomorphology II	
ESS 548	International Geology Field Studies	
ESS 549	Advanced Hydrogeology	
ESS 555	Intermediate Astronomy	
ESS 562	History of Astronomy	
ESS 571	Advanced Meteorology	
ESS 580	Special Problems	
ESS 590	Fundamentals of Soil	
ESS 591	Independent Study	
ESS 594	Geology of Northwestern National Parks	

Sample Course Plan

To track their individual degree progress, students are advised to access their Degree Audit via RamPortal regularly. For more information, visit the Degree Audit FAQ webpage (<https://www.wcupa.edu/academicEnterpriseSystems/student-system-modernization/degree-audit-faqs.aspx>).

The following is a sample suggested course sequence for this program; course offerings and availability are not guaranteed. Students should consult their academic advisor with any questions.

B.S. in Geoscience - Earth Systems Concentration

Course	Title	Credits
Year One		
Fall		
ESS 101	Introduction to Geology	3

ESS 102 or SCB 210	Humans and the Environment or The Origin of Life and the Universe	3
MAT 115 or MAT 121	Algebra, Functions, and Trigonometry or Introduction to Statistics I	3
WRT 120	Effective Writing I	3
FYE 100X	First Year Experience	4
Credits		16
Spring		
ESS 201 or ESS 204	Field Geology or Historical Geology	3
MAT 121 or MAT 115	Introduction to Statistics I or Algebra, Functions, and Trigonometry	3
BIO 110	General Biology I	4
WRT 2XX	200-level WRT Course	3
Behavioral & Social Science Gen Ed		3
Credits		16
Year Two		
Fall		
ESS 204 or ESS 201	Historical Geology or Field Geology	3
CHE 103 & CRL 103	General Chemistry I and General Chemistry I Lab	4
Humanities Gen Ed		3
Diverse Communities Gen Ed		3
Speaking Emphasis Gen Ed		3
Credits		16
Spring		
ESS 301	Environmental Geochemistry	3
ESS 302	Mineralogy	3
Behavioral & Social Science Gen Ed		3
Humanities Gen Ed		3
Elective (CHE/CRL 104 RECOMMENDED)		4
Credits		16
Year Three		
Fall		
ESS 311	Introduction to Astronomy	3
ESS 330	Introduction to Oceanography	3
ESS 347	Earth & Space Science Seminar	1
ESS 370	Introduction to Meteorology	3
PHY 130	General Physics I	4
Speaking Emphasis Gen Ed		3
Credits		17
Spring		
ESS 331	Introduction to Paleontology	3
ESS 343	Geomorphology	3
ESS 405	Igneous and Metamorphic Petrology	3
ESS 420	Structural Geology	3
Ethics Gen Ed		3
Credits		15
Year Four		
Fall		
ESS 447	Earth and Space Science Seminar	1
ESS 450	Sedimentation & Stratigraphy	3

ESS XXX	Upper-Level ESS Elective	3
Arts Gen Ed		3
Speaking Emphasis Gen Ed		3
Credits		13
Spring		
ESS XXX	Capstone Course	3
ESS XXX	Upper-Level ESS Elective	3
Elective (GEO 324 RECOMMENDED)		3
Elective (PHY 140 RECOMMENDED)		4
Gen Ed Elective		3
Credits		16
Total Credits		125

Accelerated B.S. in Geoscience - Earth Systems Concentration to the M.S. in Geoscience

Course	Title	Credits
Year One		
Fall		
ESS 101	Introduction to Geology	3
ESS 102 or SCB 210	Humans and the Environment or The Origin of Life and the Universe	3
MAT 115 or MAT 121	Algebra, Functions, and Trigonometry or Introduction to Statistics I	3
WRT 120	Effective Writing I	3
FYE 100X	First Year Experience	4
Credits		16
Spring		
ESS 201 or ESS 204	Field Geology or Historical Geology	3
MAT 121 or MAT 115	Introduction to Statistics I or Algebra, Functions, and Trigonometry	3
BIO 110	General Biology I	4
WRT 2XX	200-level WRT Course	3
Behavioral & Social Science Gen Ed		3
Credits		16
Year Two		
Fall		
ESS 204 or ESS 201	Historical Geology or Field Geology	3
CHE 103 & CRL 103	General Chemistry I and General Chemistry I Lab	4
Humanities Gen Ed		3
Diverse Communities Gen Ed		3
Speaking Emphasis Gen Ed		3
Credits		16
Spring		
ESS 301	Environmental Geochemistry	3
ESS 302	Mineralogy	3
Behavioral & Social Science Gen Ed		3
Humanities Gen Ed		3
Elective (CHE/CRL 104 RECOMMENDED)		4
Credits		16

Year Three		
Fall		
ESS 311	Introduction to Astronomy	3
ESS 330	Introduction to Oceanography	3
ESS 347	Earth & Space Science Seminar	1
ESS 370	Introduction to Meteorology	3
PHY 130	General Physics I	4
Speaking Emphasis Gen Ed		3
Credits		17
Spring		
ESS 331	Introduction to Paleontology	3
ESS 343	Geomorphology	3
ESS 405	Igneous and Metamorphic Petrology	3
ESS 420	Structural Geology	3
Ethics Gen Ed		3
Credits		15
Year Four		
Fall		
ESS 447	Earth and Space Science Seminar	1
ESS 450	Sedimentation & Stratigraphy	3
ESS XXX	Graduation Substitution	3
Arts Gen Ed		3
Speaking Emphasis Gen Ed		3
Credits		13
Spring		
ESS XXX	Capstone Course	3
ESS XXX	Graduate Substitution	3
ESS XXX	Graduate Substitution	3
Elective (GEO 324 RECOMMENDED)		3
Gen Ed Elective		3
Credits		15
Summer		
ESS 523	Field Geology of Southeastern Pennsylvania	3
ESS 596	Earth Systems Science	3
Credits		6
Year Five		
Fall		
ESS 521	Geometrics	3
ESS 547	Earth and Space Science Seminar	1
ESS 549	Advanced Hydrogeology	3
or ESS 570	or Principles of Meteorology	
ESS 5XX	Elective	3
Credits		10
Spring		
ESS 536	Environmental Geology	3
or ESS 530	or Principles of Oceanography	
ESS 602	Directed Research	3
ESS 5XX	Elective	3
ESS 5XX	Elective	3
Credits		12
Total Credits		152