ENVIRONMENTAL, EARTH, AND SUSTAINABILITY SCIENCES, BACHELOR OF SCIENCE (5018)

Program Coordinator
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The B.S. in Environmental, Earth, and Sustainability Sciences (EESS) equips students to understand and solve environmental challenges through an integrated study of environmental sciences, geosciences, sustainability, and environmental management. Graduates pursue careers in environmental consulting and compliance, geoscience, GIS/remote sensing, sustainability planning, natural resource and environmental management, geotechnical and engineering support, climate and conservation, government agencies, or continue to graduate study and Professional Geologist (PG) licensure pathways.

Through immersive fieldwork, laboratory analysis, and geospatial/data-science training, students learn to analyze complex environmental and geoscience problems while building strong foundations in scientific writing, quantitative reasoning, and professional communication. Students choose between two concentrations: **Environmental & Sustainability Sciences**, which focuses on global sustainability, environmental processes and resource management, and geospatial applications; and **Environmental & Geological Sciences**, which focuses on earth materials and environmental processes, energy and critical minerals, and hydrology, and aligns with PG licensure preparation.

Concentrations

- Environmental and Sustainability Sciences (ENSS)
- Environmental and Geological Sciences (ENGS)

Program Requirements (48-53 hours)

The major in Environmental, Earth, and Sustainability Sciences (EESS) requires a minimum of 48-53 hours and leads to a Bachelor of Science degree. Other required math and science cognate courses total an additional 6-9 hours. No minor is required.

A baccalaureate degree requires a minimum of 120 unduplicated semester hours. More information can be found at: www.wku.edu/registrar/degree_certification.php. (https://www.wku.edu/registrar/degree_certification.php)

Students who began WKU in the Fall 2014 and thereafter should review the Colonnade requirements located at: https://www.wku.edu/colonnade/colonnaderequirements.php. (https://www.wku.edu/colonnade/colonnaderequirements.php)

Code	Title	Hours
Common Core: 21-24 hours		
GEOG/GEOL 103	Our Dynamic Planet	3-4
or GEOL 111 & GEOL 113	The Earth and The Earth Laboratory	
GEOG 280	Environmental Science and Sustainability	3-4
or GEOL 250	Environmental Geology	
GEOG 295	Introduction to Research Techniques	3
or GEOL 380	Introductory Field Techniques	
GISC 316	Geographic Information Systems I	4
GEOG 300	Writing in the Geosciences	3
GEOG 391	Geoscience Statistical Analysis	4
GEOG 499	Professional Preparation	1-2
or GEOL 499	Professional Preparation in Geology	
Total Hours		**21-24**

Code	Title	Hours
Environmental and Sustainability Sciences Concentration (31 hours)		
GEOG 110	World Regional Geography	3
GISC 317	Geographic Information Systems II	4
GEOG 380	Global Sustainability	3
or GEOG 480	Sustainable Cities	
GEOG 495	Applied Research, Independent Study, or Internship	3
or GEOG 452	Applied Geoscience Field Experiences	
Electives		
Elective coursework selected from any GEOG, GISC, METR, EMDS, or GEOL 200-400 level course with advisor approval. Up to six hours may be taken outside of the department with advisor approval.		18
Total Hours		**31**

Code	Title	Hours
Environmental and Geological Sciences Concentration (25 hours)		
GEOL 112	Earth's Past and Future	3
GEOL 114	Earth's Past and Future Lab	1
GEOL 350	Mineralogy and Petrology	4
GEOL 360	Sedimentology and Stratigraphy	4
GEOL 408	Structural Geology	4
GEOL 301	Earth's Climate in Time	3
GEOL 310	Global Hydrology	3
or GEOL 440	Hydrogeology	
or GEOL 311	General Oceanography	
GEOL 420	Geomorphology	3
or GEOL 399	Research Problems in Geology	
Total Hours		**25**

Code	Title	Hours
Additional requirements for both concentrations (Select two from the following) (6-9 hours)		
BIOL 120 & BIOL 121	Biological Concepts: Cells Metabolism and Genetics and Biological Concepts: Cells, Metabolism, and Genetics Lab	4
or BIOL 122 & BIOL 123	Biological Concepts: Evolution, Diversity, and Ecology and Biological Concepts: Evolution, Diversity, and Ecology Lab	

BIOL 226 & BIOL 227	Microbial Biology and Diversity and Microbial Biology and Diversity Lab	3-4
or BIOL 315	Ecology	
CHEM 105 & CHEM 106	Fundamentals of General Chemistry and Fundamentals of General Chemistry Laboratory	4-5
or CHEM 120 & CHEM 121	College Chemistry I and College Chemistry I Laboratory	
PLSS 350	Introduction to Soils	3
CS 170	Problem Solving and Programming	3-4
or CS 180	Computer Science I	
or GISC 414	Remote Sensing Fundamentals	
or GISC 417	GIS Analysis & Modeling	
or GISC 419	GIS Programming	
DATA 301	Big Data with its Applications	3
or STAT 330	Introduction to Statistical Software	
MATH 136	Calculus I	4
PHYS 180 & PHYS 181	Introductory Modern Physics and Introductory Modern Physics Laboratory	4
or PHYS 231 & PHYS 232	Introduction to Physics and Biophysics I and Laboratory for Physics and Biophysics I	

EESS - Environmental and Geological Sciences (ENGS) concentration

First Year

Fall	Hours	Spring	Hours
GEOL 111	3	GEOL 112	3
GEOL 113	1	GEOL 114	1
ENG 100	3	ENG 200	3
GEOG 175	2	GEOL 250	3
COMM 145	3	Colonnade - Quantitative Reasoning	3
HIST 101 or HIST 102	3		
	15		**13**

Second Year

Fall	Hours	Spring	Hours
GEOL 380	3	GEOL 350	4
GISC 316	4	GEOL 360	4
GEOL 301	3	Additional Science Requirement - 1	4
Colonnade Explorations - Arts & Humanities	3	Colonnade Connections - Social & Behavioral	3
Independent Research (GEOL 399)	3		
	16		**15**

Third Year

Fall	Hours	Spring	Hours
GEOL 408	4	GEOL 420	3
GEOG 300	3	GEOG 391	4
GEOL 399	2	GEOL 310 or GEOL 311	3
Colonnade Connections - Local to Global	3	General Elective	3
Additional Science Requirement-2 (CS 170)	3		3
	15		**16**

Fourth Year

Fall	Hours	Spring	Hours
GEOL 499	2	Field Study/Internship	3
Independent Research (GEOL 399)	3	Independent Research (GEOL 399)	3
General Elective	4	General Elective	3
General Elective	3	General Elective	3
General Elective	3	General Elective	3
	15		**15**

Total Hours 120

EESS - Environmental and Sustainability Sciences (ENSS) concentration

First Year

Fall	Hours	Spring	Hours
GEOG 103 or GEOL 111	3	GEOG 110	3
ENG 100	3	GEOG 280	4
COMM 145	3	ENG 200	3
HIST 101 or HIST 102	3	ENSS Concentration Elective	3
GEOG 175	2	Colonnade - Quantitative Reasoning	3
	14		**16**

Second Year

Fall	Hours	Spring	Hours
GISC 316	4	GEOG 300	3
GEOG 295	3	GISC 317	4
ENSS Concentration Elective	3	Colonnade Connections - Local to Global	3
Colonnade Explorations - Arts & Humanities	3	ENSS Concentration Elective	3
Colonnade Connections - Systems	3	Additional Science Requirements - 1	3
	16		**16**

Third Year

Fall	Hours	Spring	Hours
GEOG 452 or GEOG 495	3	GEOG 380 or GEOG 480	3
Additional Science Requirement - 2	3	GEOG 391	4
ENSS Concentration Elective	3	ENSS Concentration Elective	3
ENSS Concentration Elective	3	Independent Research	3
Colonnade Connections - Social & Cultural	3	General Elective	3
	15		**16**

Fourth Year

Fall	Hours	Spring	Hours
Independent Research	3	GEOG 499	1
General Elective	3	Independent Research	3
General Elective	3	Field Study/Internship	3
General Elective	3	General Elective	3
General Elective	3	General Elective	2
	15		**12**

Total Hours 120