

BS in Environmental Sciences with Emphasis in Water

Degree Program Description

Earth's environment provides conditions conducive for life: an oxygenated atmosphere; water resources; and soil as a medium for plant growth. Environmental processes occurring on the planet govern the movement of air, energy, matter, and water. Through the study of **Environmental Sciences**, students will learn the science and experience the beauty of the outdoor environment. This degree program addresses how human activities can adversely alter some environmental processes and environmental quality, techniques to improve environmental quality, and practices that minimize human impacts on the environment.

The **Environmental Sciences** degree provides a strong science foundation through general science coursework and specialized studies of the atmosphere, land and soil, water, and environmental outreach and education. The degree combines interests in predicting and understanding weather patterns, monitoring environmental change, conserving and managing soil and biological organisms, assuring healthy streams and adequate water supplies, and improving environmental quality with the shaping of new policies and educating others about the natural environment and environmental issues. Example careers include Atmospheric Scientist, Climatologist, Environmental Specialist, Environmental Technician, Hydrologist, Land Manager, Meteorologist, Soil Scientist, and Water Quality Specialist. Employment may occur in a variety of sectors, including federal, state, county and city government agencies, non-government agencies (NGOs), and private consulting firms.

Major Program Requirements

Students earning a Bachelor of Science in Environmental Sciences are required to complete all University general education (<http://catalog.missouri.edu/academicdegreerequirements/generaleducationrequirements/>), [University graduation](http://catalog.missouri.edu/academicdegreerequirements/universitygraduation/) (<http://catalog.missouri.edu/academicdegreerequirements/universitygraduation/>), and degree requirements, including selected foundational courses, which may fulfill some University general education requirements.

Foundational

MATH 1100 or MATH 1160	College Algebra Precalculus Mathematics	3-5
MATH 1400 or MATH 1500	Calculus for Social and Life Sciences I Analytic Geometry and Calculus I	3-5
CHEM 1320	College Chemistry I	4
Business Elective (select from ABM, ECONOM, FINPLN)		3
AGSC_COM 2220	Verbal Communication in Agriculture, Food and Natural Resources	3
ABM 2123 or STAT 1200	Quantitative Applications in Agricultural and Natural Resource Sciences Introductory Statistical Reasoning	3
ENV_SC 1100	Introduction to Environmental Science	3
ATM_SC 1050	Introductory Meteorology	3

NAT_R 2325	Introduction to Geographic Information Systems	3
or GEOG 3040	Introduction to Geographic Information Systems GIS	
Additional Computer Course		3
ENV_SC 4560	Observing the Earth from Space	3
or ABM 1200	Applied Computer Applications	

Core Emphasis Requirements

Biological Science		15
BIO_SC 1200	General Botany with Laboratory	5
BIO_SC 1500	Introduction to Biological Systems with Laboratory	5
FOREST 4320 or BIO_SC 3650	Forest Ecology General Ecology	5
Chemistry		4
CHEM 1330	College Chemistry II	4
Geology		8
GEOL 1100 or GEOL 1200	Introduction to the Earth with Laboratory Environmental Geology with Laboratory	4
GEOL 2400	Surficial Earth Processes and Products with Laboratory	4
Policy/Regulation		3
NAT_R 4353 or ENV_SC 4400W	Natural Resource Policy/Administration Environmental Law, Policy, and Justice - Writing Intensive	3
Soil Science		5
SOIL 2100	Introduction to Soils	3
SOIL 2106	Soil Science Laboratory	2
Additional Emphasis Area Requirements		27
ENV_SC 2600	Sustainability Foundations: An Introduction to Sustainability	3
ENV_SC 3250	Pollutant Fate and Transport	3
ENV_SC 3290W	Soils and the Environment - Writing Intensive	3
ENV_SC 4450 or FOREST 4390	Environmental Hydrology Watershed Management and Water Quality	3
ENV_SC 4940	Environmental Science Internship	3

Students may identify a specific track and select from the following disciplinary elective classes approved by an academic advisor to achieve an additional 15 credit hours at the 3000/4000 levels (must take at least one Atmospheric, Environmental or Soil Science course).

Students not wishing to work in a specific track may select from either list to achieve an additional 15 credit hours at the 3000/4000 levels and at least one course must be in Atmospheric, Environmental, or Soil Science

(Tracks do not appear on transcripts or diplomas)

Hydrology Track		
AG_S_TCH 4420	Surface Water Management	3
ATM_SC 3600	Climates of the World	3
ATM_SC 4400	Micrometeorology	3
ATM_SC 4590	Radar Meteorology	3
BIOL_EN 4150	Soil and Water Conservation Engineering	3
CV_ENG 3700	Fluid Mechanics	3
CV_ENG 3702	Fundamentals of Water Resources Engineering	4
ENV_SC 4305	Environmental Soil Physics	3
ENV_SC 4306	Environmental Soil Physics Laboratory	2

ENV_SC 4318	Environmental Soil Chemistry	3
FOREST 4390	Watershed Management and Water Quality	3
GEOG 4630	River and Stream Dynamics	3
GEOL 4100	Groundwater Hydrology	3
NAT_R 3400	Water Quality and Natural Resource Management	3
SOIL 4320	Genesis of Soil Landscapes	4
Water Quality Track		
BIOL_EN 4150	Soil and Water Conservation Engineering	3
ENV_SC 4100	Lake Ecology	3
ENV_SC 4200	Stream Ecology and Hydrology	3
ENV_SC 4300	Methods in Lake Ecology	2
ENV_SC 4305	Environmental Soil Physics	3
ENV_SC 4306	Environmental Soil Physics Laboratory	2
ENV_SC 4312	Environmental Soil Microbiology	3
ENV_SC 4318	Environmental Soil Chemistry	3
F_W 3900	Ecology of Fishes	3
FOREST 4390	Watershed Management and Water Quality	3
GEOL 4300	Introduction to Low-Temperature Geochemistry	3
NAT_R 3400	Water Quality and Natural Resource Management	3
PLNT_SCI 4720	Aquatic Entomology	3
SOIL 4313	Soil Fertility and Plant Nutrition	3
Capstone Experience 3		
ENV_SC 4320	Hydrologic and Water Quality Modeling	3
or NAT_R 3400	Water Quality and Natural Resource Management	
Electives approved by faculty or professional advisor to complete 120 credits 1-7		

GEOL 2400	4 ENV_SC 3250	3
STAT 1200	3 Disciplinary Elective	3
Humanities Elective	3 General Elective	5
WI		
		3
		15
		14
		3

Fourth Year			
Fall	CR	Spring	CR
ENV_SC 4305	3	MATH 1400	3
ENV_SC 4306	2	Disciplinary Elective	6
ENV_SC 4320	3	Computer Elective	3
Disciplinary Elective	6	NAT_R 4353	3
		14	15

Total Credits: 120

Semester Plan

Below is a sample plan of study, semester by semester. A student's actual plan may vary based on course choices where options are available.

First Year						
Fall	CR	Spring	CR			
HIST 1100 or POL_SC 1100	3	CHEM 1320	4			
BIO_SC 1200	5	ENGLISH 1000	3			
General Elective	2	MATH 1100	3			
ENV_SC 1100	3	NAT_R 2325	3			
ATM_SC 1050	3					
		16	13			
Second Year						
Fall	CR	Spring	CR			
BIO_SC 1500	5	CHEM 1330	4			
ENV_SC 3290W	3	GEOL 1200	4			
ENV_SC 2600	3	SOIL 2100	3			
AGSC_COM 2220	3	Business Elective	3			
		SOIL 2106	2			
		14	16			
Third Year						
Fall	CR	Spring	CR	Summer	CR	
BIO_SC 3650	5	NAT_R 3400	3	ENV_SC 4940	3	