HAUB SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

Students interested in earning a B.S. in Environmental Systems Science (ESS) should contact haub.school@uwyo.edu for more information about the program and to schedule an appointment with an academic advisor.

Environmental Systems Science

B.S. - 68+ credit hours

FOUNDATIONS (23 credit hours)

- ○ Introduction to Systems Science
- ○ Foundation of Biological Sciences 1 course
- ○ Foundation of Earth Sciences 1 course

Foundation of Physical Sciences 3 courses

- ○ General Physics I
- ○ General Chemistry I
- ○ Geochemical Cycles in the Earth System

SPHERES (15 credit hours)

- ○ Anthrosphere 1 course
- ○ Atmosphere 1 course
- ○ Biosphere 1 course

Lithosphere 2 courses

- ○ 1 course in environmental change
- ○ 1 course in hydrology & surface processes

SKILLS & TOOLS (12 credit hours)

Choose 1 course from each category:

- ○ Calculus
- ○ Data Analysis
- ○ GIS/Remote Sensing
- ○ Applied Experience

MINOR (18+ credit hours)

As an area of focus, students must declare an existing minor:

Agroecology
Anthropology
Astronomy
Biology
Botany
Chemistry
Environment & Natural Resources
Forest Resources
Geographic Information Sciences (GIS)
Geography
Geology
Insect Biology
Land Surveying
Paleoenvironmental Studies
Physics
Planning
Rangeland Ecology & Watershed Management
Reclamation & Restoration Ecology
Remote Sensing
Soil Science
Statistics
Sustainability
Wildlife & Fisheries Biology & Management
Zoology
Other (subject to advisor approval)

Learning Outcomes

A student earning a B.S. in Environmental Systems Science will

- demonstrate a knowledge of interdisciplinary perspective and integrative thinking,
  - understand physical and biological components of environmental systems, including the human component,
- design, conduct, and interpret scientific investigations,
  - understand the ethics of scientific investigation,
  - demonstrate proficiency in data collection, statistical analysis, and use of information technology tools and modeling,
- apply systems concepts to problems concerning environmental systems and their components,
  - construct conceptual and quantitative systems models,
- examine spatial, temporal, and spatial-temporal patterns in environmental systems, and
  - use information technology tools to depict, project, and communicate such patterns.

Example Courses

*course offerings vary by semester

FOUNDATIONS - 23 credits	
Intro to Systems Science 1 course	Wyoming in the Earth System ESS 1000
Foundation of Biological Sciences 1 course	Environment ENR 1200 General Biology LIFE 1010
Foundation of Earth Sciences 1 course	Water, Dirt & Climate ENR 1500 Physical Geography GEOG 1010 Physical Geology GEOL 1100
Foundation of Physical Sciences 3 courses	General Chemistry I CHEM 1020 Geochemical Cycles in the Earth System ESS/GEOL 2000 General Physics I PHYS 1110
SPHERES - 15 credits	
Anthrosphere 1 course	Environmental Anthropology ANTH/ENR 4310 Conservation of Natural Resources ENR/GEOG 4040 Environmental Sociology SOC 3950
Atmosphere 1 course	Introduction to Meteorology ATSC 2000 Global Warming: The Science ATSC 2100 Weather & Climate GEOG 3450 Global Change: A Geological Perspective GEOL 3500
Biosphere 1 course	Biogeography GEOG 4460 Animal Biology LIFE 2022 Biology of Plants & Fungi LIFE 2023
Lithosphere 2 courses	Choose 1 course in environmental change Environmental Change GEOG 3480 Global Change: A Geological Perspective GEOL 3500
	Choose 1 course in hydrology & surface processes Wildland Hydrology ENR/REWM 4285 Geomorphology GEOL 2150 Geomorphology of Earth's Dynamic Landscapes GEOL 3010 Watershed Management REWM 4700
SKILLS & TOOLS - 12 credits	
Calculus 1 course	Calculus I MATH 2200
Data Analysis 1 course	Risk Analysis ENR 4500 Environmental Data Analysis GEOL 4525
GIS/Remote Sensing 1 course	GIS in Anthropology ANTH 4106 Survey of Remote Sensing Applications BOT/GEOG 3150 Remote Sensing of the Environment BOT/GEOG 4111 Foundations of GIS & Technology GEOG 2150
Applied Experience 1 course	Internship ESS 4970
MINOR - 18+ credits	Requirements will vary