

“W” Number: _____
 Student Name: _____
 Advisor Name: _____

Catalog: 2021-2022 University of Wyoming Catalog
 Program: Environmental Systems Science, B.S.

Environmental Systems Science, B.S.

Environmental Systems Science (ESS) is an interdisciplinary undergraduate degree in environmental science, focusing on the interactions between the various components of Earth and environmental systems, including the biosphere, lithosphere, atmosphere, and anthrosphere.

Students earning a B.S. in Environmental Systems Science will

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

Students earning a B.S. degree in ESS complete coursework including:

23+ Credit Hours of Foundations Courses:

Intro to Systems Science

Course Name	Credits:	Term Taken	Grade	Gen Ed
ESS1000 - Wyoming in the Earth System	Credits: 3			

Foundation of Biological Sciences

(Choose one course):

Course Name	Credits:	Term Taken	Grade	Gen Ed
AECL1000 - Agroecology	Credits: 4			
ENR1200 - Environment	Credits: 4			
LIFE1010 - General Biology	Credits: 4			

Foundation of Earth Sciences

(Choose one course):

Course Name	Credits:	Term Taken	Grade	Gen Ed
ENR1500 - Water, Dirt, and Earth's Environment	Credits: 4			
GEOL1500 - Water, Dirt, and Earth's Environment	Credits: 4			
GEOG1010 - Introduction to Physical Geography	Credits: 4			
GEOL1100 - Physical Geology	Credits: 4			

Foundation of Physical Sciences

(Complete all courses):

Course Name	Credits:	Term Taken	Grade	Gen Ed
CHEM1020 - General Chemistry I	Credits: 4			
PHYS1110 - General Physics I	Credits: 4			
ESS2000 - Geochemical Cycles and the Earth System	Credits: 4			
OR				
GEOL2000 - Geochemical Cycles and the Earth System	Credits: 4			

15+ Credit Hours of Spheres Courses:

Anthrosphere

(Choose one course):

Course Name	Credits:	Term Taken	Grade	Gen Ed
ENR4030 - Ecology of Knowledge	Credits: 3			
AMST4030 - Ecology of Knowledge	Credits: 3			
ENR4310 - Environmental Anthropology	Credits: 3			

ANTH4310 - Environmental Anthropology	Credits: 3			
ENR4040 - Conservation of Natural Resources	Credits: 3			
GEOG4040 - Conservation of Natural Resources	Credits: 3			
ENR4412 - Global Environment History	Credits: 3			
HIST4412 - Global Environment History	Credits: 3			
ENR3950 - Environmental Sociology	Credits: 3			
SOC3950 - Environmental Sociology	Credits: 3			
GEOG3400 - Traditional Ecological Knowledge	Credits: 3			
NAIS3400 - Traditional Ecological Knowledge	Credits: 3			
GEOG3550 - Natural Hazards and Society	Credits: 3			
GEOG3650 - Energy for Society: Addressing the Energy Grand Challenge	Credits: 4			

Atmosphere

(Choose one course):

Course Name	Credits:	Term Taken	Grade	Gen Ed
ATSC2100 - Global Warming: The Science of Humankind's Energy Consumption Impacting Climate	Credits: 3			
ATSC2200 - Severe and Unusual Weather	Credits: 3			
ERS3010 - Air Quality Management	Credits: 3			
ENR3450 - Weather and Climate	Credits: 3			
GEOG3450 - Weather and Climate	Credits: 3			
GEOG4440 - Advanced Global Climate Variability	Credits: 3			

Biosphere

Must Complete all Three Courses

Course Name	Credits:	Term Taken	Grade	Gen Ed
ENR4010 - Winter Ecology: Skills of the Winter Naturalist	Credits: 1			
ENR4011 - Winter Ecology: Snowpack Science and Dynamics	Credits: 1			
ENR4012 - Winter Ecology: Wildlife and Plant Adaptations	Credits: 1			

OR Choose One Course:

Course Name	Credits:	Term Taken	Grade	Gen Ed
ENR2450 - Fish and Wildlife Management in the Anthropocene	Credits: 4			
ZOO2450 - Fish and Wildlife Management in the Anthropocene	Credits: 4			
GEOG4460 - Biogeography	Credits: 3			
LIFE2022 - Animal Biology	Credits: 4			
LIFE2023 - Biology of Plants and Fungi	Credits: 4			
LIFE3400 - General Ecology	Credits: 3			
REWM2000 - Principles of Rangeland Management	Credits: 3			
REWM4200 - Reclamation of Drastically Disturbed Lands	Credits: 3			
REWM4440 - Applied Fire Ecology	Credits: 3			

Lithosphere - Environmental Change

(Choose one course):

Course Name	Credits:	Term Taken	Grade	Gen Ed
ENR3130 - Environmental Quality	Credits: 3			
SOIL3130 - Environmental Quality	Credits: 3			
ENR4430 - Green Chemistry and Global Environmental Problems	Credits: 3			
CE4430 - Green Chemistry and Global Environmental Problems	Credits: 3			
ESS3480 - Environmental Change	Credits: 3			
GEOG3480 - Environmental Change	Credits: 3			
GEOG3500 - Global Change: A Geological Perspective	Credits: 4			

Lithosphere - Hydrology & Surface Processes

(Choose one course):

Course Name	Credits:	Term Taken	Grade	Gen Ed

ENR4285 - Wildland Hydrology	Credits: 3			
REWM4285 - Wildland Hydrology	Credits: 3			
GEOG3010 - Geomorphology of Earth's Dynamic Landscapes	Credits: 3			
GEOL3400 - Geologic Hazards: A Historical and Scientific Review	Credits: 4			
REWM4700 - Wildland Watershed Management	Credits: 3			
REWM4710 - Watershed Water Quality Management	Credits: 3			

14+ Credit Hours of Skills & Tools Courses:

Statistics

(Choose one course):

Course Name	Credits:	Term Taken	Grade	Gen Ed
STAT2050 - Fundamentals of Statistics	Credits: 4			
STAT2070 - Introductory Statistics for the Social Sciences	Credits: 4			

Data Analysis

(Choose one course):

Course Name	Credits:	Term Taken	Grade	Gen Ed
ENR4525 - Environmental Data Analysis	Credits: 4			
GEOL4525 - Environmental Data Analysis	Credits: 4			
ESS4001 - Analysis of Nature's Data	Credits: 3			
GEOL3250 - Geosciences and Computers	Credits: 4			
STAT3050 - Statistical Methods	Credits: 3			
ZOO4400 - Population Ecology	Credits: 3			

GIS/Remote Sensing

(Choose one course):

Course Name	Credits:	Term Taken	Grade	Gen Ed
GIST1200 - Geospatial Foundations	Credits: 3			
GIST2310 - Intro to Geographic Information Systems	Credits: 4			
GIST2140 - Survey of Remote Sensing Applications	Credits: 3			
GIST2150 - Introduction to Programming in Geospatial Information Science and Technology	Credits: 3			
GIST4130 - Applied Remote Sensing for Agricultural Management	Credits: 3			
RNEW4130 - Applied Remote Sensing for Agricultural Management	Credits: 3			

Applied Experience (1 credit)

Course Name	Credits:	Term Taken	Grade	Gen Ed
ESS4970 - Internship in Earth System Science	Credits: 1-6			

Capstone

Course Name	Credits:	Term Taken	Grade	Gen Ed
ESS4950 - Exploring the Earth System	Credits: 3			

18+ Credit Hours in an Approved Minor

18+ credit hours in an approved minor* or concurrent major as an area of specialization: Agroecology, Anthropology, Astronomy, Biology, Botany, Chemistry, Environment & Natural Resources, Geography, Geology, Insect Biology, Land Surveying, Paleoenvironmental Studies, Physics, Rangeland Ecology & Watershed Management, Reclamation & Restoration Ecology, Soil Science, Statistics, Sustainability, Wildlife & Fisheries Biology & Management, or Zoology

* other options available; subject to advisor approval

6+ Credit Hours of Haub School Requirements Courses:

- U.S. Diversity (choose one)
- Global Awareness (choose one)

Additional Requirements:

Students complete additional credit hours in consultation with advisor if needed to meet minimum 120 credits, including 42 upper division credits, to earn a bachelor's degree from the University of Wyoming.

Additionally, students must:

- earn a C or better in all courses fulfilling program requirements - including Haub School U.S. Diversity and Global Awareness courses, and degree, major, and/or minor courses;
- earn 12 credits unique to each program when enrolled in multiple Haub School programs;
- meet University of Wyoming requirements for earning a bachelor's degree, including, but not limited to, completion of University Studies Program and maintaining minimum 2.0 GPA for good academic standing and graduation.

Notes: