

# Environmental Systems Science, BS



## University of Wyoming, 2016-17

*Environmental Systems Science is an interdisciplinary degree and, as such, there are many options open to students leading to different career paths. Academic advisors in the Haub School of Environment and Natural Resources will help students determine which course options best fit with long term goals. It is critical that students establish and maintain a close working relationship with their academic advisor.*

Freshman Fall Semester				Hrs	Min	Grade	Notes
		USP First-Year Seminar		3		C	FY
		Foundations in Biological Sciences <sup>a</sup>		4		C	PN
		Foundations of Earth Sciences <sup>b</sup>		4		C	PN
MATH	2200	Calculus I * <sup>^</sup>		4		C	Q
Credit hours subtotal:				<b>15</b>			

Freshman Spring Semester				Hrs	Min	Grade	Notes
		USP Communication I		3		C	C1
		USP US & Wyoming Constitutions		3			V
ESS	1000	Wyoming in the Earth System <sup>c</sup>		4			
PHYS	1110	General Physics I <sup>d</sup>		4			
Credit hours subtotal:				<b>14</b>			

Sophomore Fall Semester				Hrs	Min	Grade	Notes
		USP Human Culture		3			H
		Atmosphere <sup>e</sup>		3			
CHEM	1020	General Chemistry I <sup>d</sup>		4			
		Lithosphere I: Hydrology/Surface Processes <sup>f</sup>		4			
Credit hours subtotal:				<b>14</b>			

Sophomore Spring Semester				Hrs	Min	Grade	Notes
		USP Communication 2		3		C	C2
		Skills & Tools: GIS/Remote Sensing <sup>^</sup>		4			
GEOL	2000	Geochemical Cycles & the Earth System <sup>d</sup>		4			Cross listed with ESS 2000.
		Required Minor Course		3			
Credit hours subtotal:				<b>14</b>			

This is a guide for course work in the major; actual course sequence may vary by student. Please refer to the online student degree evaluation, and consult with an academic advisor. • Not all courses are offered every semester and some electives may have prerequisites. Students should review the course descriptions in the *University Catalog* and consult with their academic advisor to plan accordingly.

### University of Wyoming requirements:

Students must have a minimum cumulative GPA of 2.0 to graduate. • Students must complete 42 hours of upper division (3000-level or above) coursework, 30 of which must be from the University of Wyoming. • Courses must be taken for a letter grade unless offered only for S/U. • University Studies Program (USP) Human Culture (H) and Physical & Natural World (PN) courses must be taken outside of the major subject, but can be cross-listed with the major.

### Environmental Systems Science Program Notes:

This is an interdisciplinary degree housed in the Haub School of Environment and Natural Resources (ENR), and all students interested in the BS in Environmental Systems Science should consult with an advisor in ENR. • This degree **requires** student to select a minor as an area of focus (minimum of 18 hours). The minor will be selected from a list of pre-approved areas and with guidance from the student's academic advisor. Minors vary in the number of credit hours required; students should work closely with their advisors in making sure they meet credit hour requirements. Students are **encouraged** to earn a double major in their areas of interest.

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Junior Fall Semester		Hrs	Min Grade	Notes
USP Human Culture		3	H	
Lithosphere II: Environmental Change <sup>f</sup>		3		
Biosphere <sup>g</sup>		3		
Required Minor Courses		6		
Credit hours subtotal:		<b>15</b>		

Junior Spring Semester		Hrs	Min Grade	Notes
USP Communication 3		3	C C3	
Anthrosphere <sup>b</sup>		3		
Required Minor Courses		9		
Upper Division Elective		3		
Credit hours subtotal:		<b>18</b>		

Senior Fall Semester		Hrs	Min Grade	Notes
ESS 4970	Internship in Earth System Science <sup>^</sup>	2		Must follow an applied experience in the field; can be taken in other semesters.
Upper Division Electives		12		Students are encouraged to apply these credits to a minor or double major.
Credit hours subtotal:		<b>14</b>		

Senior Spring Semester		Hrs	Min Grade	Notes
ENR 4525	Data Analysis <sup>^</sup>	4		Can take in senior fall semester.
Upper Division Electives		12		Students are encouraged to apply this to a minor or double major.
Credit hours subtotal:		<b>16</b>		
<b>TOTAL CREDIT HOURS: 120</b>				

## Environment Systems Science Program Notes con't:

Students majoring in Environment Systems Science will take courses in the following areas:

### Foundations (23 credits)

- a **Foundations of Biological Sciences.** One [1] course from the following:  
*ENR 1200 Environment (4 hrs) LIFE 1010 General Biology (4 hrs) \**  
*(field-based labs required before the start of the sem)*
- b **Foundations of Earth Science.** One [1] course from the following:  
*ENR 1500 Water, Dirt, & Climate (4 hrs) GEOL 1100 Physical Geology (4 hrs)*  
*GEOG 1010 Intro to Physical Geography (4 hrs)*
- c **Introduction to Systems Science.** One [1] course:  
  - *ESS 100 Wyoming in the Earth System (3 hrs)*
- d **Foundations of Physical Sciences.** Three [3] courses:  
  - *PHYS 1110 General Physics I (4 hrs)*
  - *CHEM 1020 General Chemistry I (4 hrs)*
  - *ESS/GEOL 2000 Geochemical Cycles in the Earth System (4 hrs)*

### Spheres (15 credits)

- e **Atmosphere.** One [1] course from the following:  
*ATSC 2000 Intro to Meteorology (4 hrs) GEOG 3450 Weather & Climate (3 hrs)*  
*ATSC 2100 Atmospheric Change (3 hrs) GEOL 3500 Global Change (4 hrs)*
- f **Lithosphere.** Two [2] courses, one from each of the following tracks:  
  - **Environmental Change.** One [1] course from the following:  
*GEOG 3480 Environmental Changes (3 hrs) GEOL 3500 Global Change (4 hrs)*
  - **Hydrology & Surface Processes.** One [1] course from the following:  
*ENR/REWM Wildland Hydrology (3 hrs) GEOL 3010 Geomorphology of Earth's Dynamic Landscapes (3 hrs)*  
*GEOL 2150 Geomorphology REWM 4700 Watershed Management (3 hrs)*

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*g* **Biosphere.** One [1] course from the following:

*GEOG 4460 Biogeography (3 hrs)*

*LIFE 2023 Biology of Plants & Fungi (4 hrs)*

*LIFE 2022 Animal Biology (4 hrs)*

*h* **Anthrosphere.** One [1] course from the following:

*ANTH/ENR 4310 Environmental Anthropology (3 hrs)*

*SOC 3950 Environmental Sociology (3 hrs)*

*ENR/GEOG 4040 Conservation of Nat Resources (3 hrs)*

<sup>^</sup> **Skills & Tools** (12 credits)

▪ **Calculus** (MATH 2200 - 4 hrs)

▪ **Data Analysis.** One [1] course from the following:

*ENR 4500 Risk Analysis (3 hrs)*

*GEOL 4525 Environmental Data Analysis (4 hrs)*

▪ **GIS/Remote Sensing.** One [1] course from the following:

*ANTH 4160 GIS in Anthropology (4 hrs)*

*BOT/GEOG 4111 Remote Sensing of the Environment (4 hrs)*

*BOT/GEOG 3150 Survey/Remote Sensing Apps (3 hrs)*

*GEOG 2150 Foundations of GIS & Technology (4 hrs)*

▪ **Applied Experience** (ESS 4970 - 2 hrs)

\* Requires MATH ACT  $\geq 27$ , MATH SAT  $\geq 600$ , Math Placement Exam  $\geq 5$ , or  $\geq$  C in MATH 1405 or 1450. (University standard)

\*\* Requires MATH ACT  $\geq 21$ , MATH SAT  $\geq 600$ , Math Placement Exam  $\geq 2$ , or  $\geq$  C in MATH 0921. (University standard)