ECOLOGY AND ECOSYSTEMS SCIENCE (B.S.)

Required course work includes the university requirements (see regulation J-3 (https://catalog.uidaho.edu/general-requirements-academic-procedures/j-general-requirements-baccalaureate-degrees/)) and:

Code	Title	Hours
BIOL 114	Organisms and Environments	4
BIOL 115	Cells and the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
BIOL 213	Structure and Function Across the Tree of Life	4
BIOL 310	Genetics	3
or GENE 314	General Genetics	
or BIOL 421	Advanced Evolution/Population Dynamics	
Select one of the following:		4
CHEM 101 & 101L	Introduction to Chemistry and Introduction to Chemistry Laboratory	
CHEM 111 & 111L	General Chemistry I and General Chemistry I Laboratory	
CHEM 275	Carbon Compounds	3
or CHEM 277	Organic Chemistry I	
COMM 101	Fundamentals of Oral Communication	3
ECON 202	Principles of Microeconomics	3
or ECON 272	Foundations of Economic Analysis	
ENGL 317	Technical Writing II	3
FOR 221	Principles of Ecology	3
or WLF 220	Principles of Ecology	
FOR 375	Fundamentals of Geomatics	3
MATH 160	Survey of Calculus	4
or MATH 170	Calculus I	
NR 101	Exploring Natural Resources	2
NR 200	Seminar	1
NR 325	Community Ecology	3
NR 326	Ecosystem Ecology	3
NR 421		
NRS 235	Society and Natural Resources	3
NRS 383	Natural Resource and Ecosystem Service Economics	3
Select one of the following:		4
PHYS 100 & 100L	Fundamentals of Physics and Fundamentals of Physics Lab	
PHYS 111 & 111L	General Physics I and General Physics I Lab	
REM 429	Landscape Ecology	3
STAT 251	Statistical Methods	3
WLF 448	Fish and Wildlife Population Ecology	4
or FOR 448	Plant Population Ecology	
Select one of the following emphasis areas:		**26-31**
Aquatic Ecology (p. 1)		
Terrestrial Ecology (p. 1)		
Ecosystem Ecology (p. 2)		
Total Hours		**96-101**

A. Aquatic Ecology

Code	Title	Hours
FISH 415	Limnology	4
FISH 430	Riparian and River Ecology	3
SOIL 452	Environmental Water Quality	3
Select of of the following Tools and Technology courses:		3-4
GEOG 424	Hydrologic Applications of GIS and Remote Sensing	
NRS 472	Remote Sensing of the Environment	
REM 475	Remote Sensing Application with Unmanned Aerial Systems (UAS)	
STAT 407	Experimental Design	
STAT 427	R Programming	
STAT 427	R Programming	
STAT 431	Statistical Analysis	
STAT 436	Applied Regression Modeling	
Select one of the following Organismal Biology courses:		4
BIOL 489	Herpetology	
FISH 481	Ichthyology	
FISH 450 & FISH 451	Ecology & Conservation of Freshwater Invertebrates and Freshwater Invertebrate Field Methods	
Complete a minimum of 9 credits from the following courses:		9
ENVS 450	Environmental Hydrology	
FISH 314	Fish Ecology	
FISH 315	Fish Ecology Field Techniques and Methods	
FISH 497	Senior Thesis	
or FOR 497	Senior Thesis	
FOR 462	Watershed Science and Management	
GEOG 430	Climate Change Ecology	
REM 440	Restoration Ecology	
WLF 440	Conservation Biology	
Total Hours		**26-27**

Courses to total 120 credits for this degree.

B. Terrestrial Ecology

Code	Title	Hours
FOR 220	Forest Biology & Dendrology	3
or REM 459	Rangeland Ecology	
FIRE 326	Fire Ecology	3
SOIL 205	The Soil Ecosystem	3
SOIL 206	The Soil Ecosystem Lab	1
WLF 314	Ecology of Terrestrial Vertebrates	3
WLF 411	Wildland Habitat Ecology and Assessment	2
Select one of the following Tools and Technology courses:		3
NRS 472	Remote Sensing of the Environment	
REM 475	Remote Sensing Application with Unmanned Aerial Systems (UAS)	
STAT 422	Survey Sampling Methods	
STAT 431	Statistical Analysis	

WLF 370	Management and Communication of Scientific Data	
Select one of the following Organismal Biology courses:		3-4
BIOL 483	Mammalogy	
BIOL 489	Herpetology	
ENT 469	Introduction to Forest Insects	
FOR 468	Forest and Plant Pathology	
REM 465	Ecophysiology	
WLF 482	Ornithology	
Complete a minimum of 9 credits of upper-division courses selected in consultation with an advisor		9
Total Hours		**30-31**

Courses to total 122 credits for this degree.

C. Ecosystem Ecology

Code	Title	Hours
CHEM 112	General Chemistry II	4
CHEM 112L	General Chemistry II Laboratory	1
FOR 330	Terrestrial Ecosystem Ecology	4
SOIL 205	The Soil Ecosystem	3
SOIL 206	The Soil Ecosystem Lab	1
SOIL 415	Soil and Environmental Physics	3
or SOIL 422	Environmental Soil Chemistry	
SOIL 425	Microbial Ecology	3
Select one of the following Remote Sensing Tools and Technology courses:		3
GEOG 424	Hydrologic Applications of GIS and Remote Sensing	
NRS 472	Remote Sensing of the Environment	
REM 475	Remote Sensing Application with Unmanned Aerial Systems (UAS)	
Complete a minimum of 9 credits from the following courses:		9
GEOG 301	Meteorology	
GEOG 313	Global Climate Change	
GEOG 401	Climatology	
GEOG 407	Spatial Analysis and Modeling	
GEOG 430	Climate Change Ecology	
SOIL 450	Environmental Hydrology	
SOIL 452	Environmental Water Quality	
SOIL 454	Pedology	
STAT 427	R Programming	
STAT 431	Statistical Analysis	
Total Hours		**31**

Courses to total 123 credits for this degree.

A. Aquatic Ecology Emphasis

Fall Term 1		Hours
BIOL 114	Organisms and Environments	4
ENGL 101	Writing and Rhetoric I	3
MATH 143	College Algebra	3
NR 101	Exploring Natural Resources	2
(CHEM 101 AND CHEM 101L) OR (CHEM 111 AND CHEM 111L)		4
	Hours	**16**
Spring Term 1		
BIOL 115	Cells and the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
COMM 101	Fundamentals of Oral Communication	3
ENGL 102	Writing and Rhetoric II	3
MATH 160 or MATH 170	Survey of Calculus or Calculus I	4
Humanistic and Artistic Ways of Knowing Course		3
	Hours	**17**
Fall Term 2		
CHEM 275 or CHEM 277	Carbon Compounds or Organic Chemistry I	3
NR 200	Seminar (Current Issues in Ecology)	1
NRS 235	Society and Natural Resources	3
STAT 251	Statistical Methods	3
(PHYS 100 AND PHYS 100L) OR (PHYS 111 AND PHYS 111L)		4
	Hours	**14**
Spring Term 2		
BIOL 213	Structure and Function Across the Tree of Life	4
FOR 221 or WLF 220	Principles of Ecology or Principles of Ecology	3
ECON 202 or ECON 272	Principles of Microeconomics or Foundations of Economic Analysis	3
American Diversity Course		3
Elective Course		1
	Hours	**14**
Fall Term 3		
NR 325	Community Ecology	3
ENGL 317	Technical Writing II	3
BIOL 310 OR BIOL 421 OR GENE 314		3
Emphasis Area Elective, Major Elective Course		3
Humanistic and Artistic Ways of Knowing Course		3
	Hours	**15**
Spring Term 3		
FOR 375	Fundamentals of Geomatics	3
NR 326	Ecosystem Ecology	3
NRS 383	Natural Resource and Ecosystem Service Economics	3
BIOL 489 OR FISH 481 OR (FISH 450 AND FISH 451)		3
International Course		3
	Hours	**15**
Fall Term 4		
NR 421		2
FISH 415	Limnology	4
GEOG 424 OR NRS 472 OR REM 475 OR STAT 407 OR STAT 427 OR STAT 431 OR STAT 436		3
Emphasis Area Elective, Major Elective Course		3
Emphasis Area Elective, Major Elective Course		3
	Hours	**15**
Spring Term 4		
REM 429	Landscape Ecology	3
WLF 448 or FOR 448	Fish and Wildlife Population Ecology or Plant Population Ecology	4
FISH 430	Riparian and River Ecology	3
SOIL 452	Environmental Water Quality	3
Elective Course		1
	Hours	**14**
	Total Hours	**120**

B. Terrestrial Ecology

Fall Term 1		Hours
BIOL 114	Organisms and Environments	4
ENGL 101	Writing and Rhetoric I	3

MATH 143	College Algebra	3
NR 101	Exploring Natural Resources	2
(CHEM 101 AND CHEM 101L) OR (CHEM 111 AND CHEM 111L)		4
	Hours	**16**
Spring Term 1		
BIOL 115	Cells and the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
ENGL 102	Writing and Rhetoric II	3
MATH 160 or MATH 170	Survey of Calculus or Calculus I	4
COMM 101	Fundamentals of Oral Communication	3
Humanistic and Artistic Ways of Knowing Course		3
	Hours	**17**
Fall Term 2		
CHEM 275 or CHEM 277	Carbon Compounds or Organic Chemistry I	3
NR 200	Seminar	1
NRS 235	Society and Natural Resources	3
FOR 220 or REM 459	Forest Biology & Dendrology or Rangeland Ecology	3
(PHYS 100 AND PHYS 100L) OR (PHYS 111 AND PHYS 111L)		4
	Hours	**14**
Spring Term 2		
BIOL 213	Structure and Function Across the Tree of Life	4
FOR 221 or WLF 220	Principles of Ecology or Principles of Ecology	3
ECON 202 or ECON 272	Principles of Microeconomics or Foundations of Economic Analysis	3
SOIL 205	The Soil Ecosystem	3
SOIL 206	The Soil Ecosystem Lab	1
STAT 251	Statistical Methods	3
	Hours	**17**
Fall Term 3		
NR 325	Community Ecology	3
BIOL 310 or BIOL 421 or GENE 314	Genetics or Advanced Evolution/Population Dynamics or General Genetics	3
ENGL 317	Technical Writing II	3
WLF 314	Ecology of Terrestrial Vertebrates	3
Humanistic and Artistic Ways of Knowing Course		3
	Hours	**15**
Spring Term 3		
FOR 375	Fundamentals of Geomatics	3
NR 326	Ecosystem Ecology	3
NRS 383	Natural Resource and Ecosystem Service Economics	3
Emphasis Elective Course, Major Elective Course		3
International Course		3
	Hours	**15**
Fall Term 4		
NR 421		2
FIRE 326	Fire Ecology	3
WLF 411	Wildland Habitat Ecology and Assessment	2
NRS 472 OR REM 475 OR STAT 422 OR STAT 431 OR WLF 370		3
Emphasis Area Elective, Major Elective Course		2
American Diversity Course		3
	Hours	**15**
Spring Term 4		
REM 429	Landscape Ecology	3
WLF 448 or FOR 448	Fish and Wildlife Population Ecology or Plant Population Ecology	4
BIOL 483 OR BIOL 489 OR ENT 469 OR FOR 468 OR REM 465 OR WLF 482		3
Emphasis Area Elective, Major Elective Course		3
	Hours	**13**
	Total Hours	**122**

C. Ecosystem Ecology

Fall Term 1		**Hours**
BIOL 114	Organisms and Environments	4
ENGL 101	Writing and Rhetoric I	3
MATH 143	College Algebra	3
NR 101	Exploring Natural Resources	2
(CHEM 101 AND CHEM 101L) OR (CHEM 111 AND CHEM 111L)		4
	Hours	**16**
Spring Term 1		
BIOL 115	Cells and the Evolution of Life	3
BIOL 115L	Cells and the Evolution of Life Laboratory	1
COMM 101	Fundamentals of Oral Communication	3
ENGL 102	Writing and Rhetoric II	3
MATH 160 or MATH 170	Survey of Calculus or Calculus I	4
Humanistic and Artistic Ways of Knowing Course		3
	Hours	**17**
Fall Term 2		
CHEM 112	General Chemistry II	4
CHEM 112L	General Chemistry II Laboratory	1
NR 200	Seminar	1
NRS 235	Society and Natural Resources	3
STAT 251	Statistical Methods	3
(PHYS 100 AND PHYS 100L) OR (PHYS 111 AND PHYS 111L)		4
	Hours	**16**
Spring Term 2		
BIOL 213	Structure and Function Across the Tree of Life	4
FOR 221 or WLF 220	Principles of Ecology or Principles of Ecology	3
ECON 202 or ECON 272	Principles of Microeconomics or Foundations of Economic Analysis	3
CHEM 275 or CHEM 277	Carbon Compounds or Organic Chemistry I	3
	Hours	**13**
Fall Term 3		
NR 325	Community Ecology	3
BIOL 310 or BIOL 421 or GENE 314	Genetics or Advanced Evolution/Population Dynamics or General Genetics	3
ENGL 317	Technical Writing II	3
SOIL 205	The Soil Ecosystem	3
SOIL 206	The Soil Ecosystem Lab	1
Humanistic and Artistic Ways of Knowing Course		3
	Hours	**16**
Spring Term 3		
FOR 375	Fundamentals of Geomatics	3
NR 326	Ecosystem Ecology	3
NRS 383	Natural Resource and Ecosystem Service Economics	3
FOR 330	Terrestrial Ecosystem Ecology	4
International Course		3
	Hours	**16**
Fall Term 4		
NR 421		2
SOIL 415 or SOIL 422	Soil and Environmental Physics or Environmental Soil Chemistry	3
GEOG 424 or NRS 472 or REM 475	Hydrologic Applications of GIS and Remote Sensing or Remote Sensing of the Environment or Remote Sensing Application with Unmanned Aerial Systems (UAS)	3

Emphasis Area Elective, Major Elective Course		3
Emphasis Area Elective, Major Elective Course		3
	Hours	**14**
Spring Term 4		
REM 429	Landscape Ecology	3
SOIL 425	Microbial Ecology	3
WLF 448 or FOR 448	Fish and Wildlife Population Ecology or Plant Population Ecology	4
Emphasis Area Elective, Major Elective Course		2
American Diversity Course		3
	Hours	**15**
	Total Hours	**123**

After completing the B.S., Ecology and Ecosystem Science, students will be able to:

1) Explain basic population, community, ecosystem, and landscape ecology concepts, how these processes shape evolutionary processes, and regulate the distribution, abundance and diversity of organisms.

2) Evaluate how ecological process across all scales are affected by human activities.

3) Effectively use field and laboratory techniques commonly used in the field of ecology and ecosystem science.

4) Effectively use quantitative methods to analyze and understand ecological systems, including the interpretation of numeric and graphical data.

5) Synthesize information from the primary scientific literature and logically interpret the results of original research in the context of established ecological knowledge.

6) Effectively practice written and oral communication skills necessary to communicate research findings and interpretations to diverse audiences, including policy makers, scientists, stake holders and the general public.