

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	
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	Advanced Field Ecology	2
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 98-103

A. Aquatic Ecology

Code	Title	Hours
FISH 415	Limnology	4
FISH 430	Riparian and River Ecology	3
SOIL 452	Environmental Water Quality	3
Select one 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		
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	Precalculus I: 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	Advanced Field Ecology	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

	Hours
Fall Term 1	
BIOL 114 Organisms and Environments	4
ENGL 101 Writing and Rhetoric I	3
MATH 143 Precalculus I: 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 Survey of Calculus or MATH 170 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 Carbon Compounds or CHEM 277 or Organic Chemistry I	3
NR 200 Seminar	1
NRS 235 Society and Natural Resources	3
FOR 220 Forest Biology & Dendrology or REM 459 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 Principles of Ecology or WLF 220 or Principles of Ecology	3
ECON 202 Principles of Microeconomics or ECON 272 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 Genetics or BIOL 421 or Advanced Evolution or GENE 314 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 Advanced Field Ecology	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 Fish and Wildlife Population Ecology or FOR 448 or Plant Population Ecology	4
BIOL 483 OR BIOL 489 OR ENT 469 OR FOR 468 OR WLF 482	3
Emphasis Area Elective, Major Elective Course	3
Hours	13
Total Hours	122

C. Ecosystem Ecology

	Hours
Fall Term 1	
BIOL 114 Organisms and Environments	4
ENGL 101 Writing and Rhetoric I	3
MATH 143 Precalculus I: 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 Survey of Calculus or MATH 170 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 Principles of Ecology or WLF 220 or Principles of Ecology	3
ECON 202 Principles of Microeconomics or ECON 272 or Foundations of Economic Analysis	3
CHEM 275 Carbon Compounds or CHEM 277 or Organic Chemistry I	3
Hours	13
Fall Term 3	
NR 325 Community Ecology	3
BIOL 310 Genetics or BIOL 421 or Advanced Evolution or GENE 314 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 Advanced Field Ecology	2
SOIL 415 Soil and Environmental Physics or SOIL 422 or Environmental Soil Chemistry	3

4 Ecology and Ecosystems Science (B.S.)

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.