

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 | |

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| 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 |

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|--------------------------------------------------------------------------------|---------------------------------------------------------------------|------------|
| (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 |

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|----------------------------------------------------------------------------------------|------------|
| 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.