Animal Ecology

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The animal ecology curriculum provides its majors with an understanding of ecological principles and processes and their applications to natural resource management. It is oriented toward students desiring a general and flexible program in environmental biology and for those planning graduate study. Students may select from four options: Fisheries and Aquatic Sciences, Interpretation of Natural Resources, Pre-veterinary and Wildlife Care, or Wildlife. Graduates find employment as aquaculturists, aquatic ecologists, wildlife biologists, fisheries biologists, resource managers, and ecologists for industry, environmental consulting firms, natural resource and environmental agencies and organizations, zoos, and as educators.

Graduates of the Animal Ecology major understand the basic principles of animal biology, ecology and management, and relevant aspects of scientific communication, basic mathematics and sciences, computing applications, and personal and professional development. Four specific options prepare students for careers in interpretation of natural resources, fisheries and aquatic sciences, pre-veterinary and wildlife care, and wildlife. Each option has specific outcomes expectations that include (1) the scope of the specialization and its relationships to broader aspects of animal ecology, biotic resource management, and other allied scientific disciplines and professions, (2) career opportunities and requirements, and (3) knowledge and skills appropriate for employment at technical and practitioner levels in each discipline. Graduates are able to communicate and work effectively in the multidisciplinary arena of ecology and natural resource management.

All options require three months (400 hours) of relevant work experience or study at a biological station prior to graduation. The latter may be accomplished at the university’s affiliate field stations: Iowa Lakeside Laboratory at West Lake Okoboji, and Gulf Coast Research Laboratory at Ocean Springs, Mississippi. Information on these laboratories is available from the department’s Student Services Center.

Pre-veterinary medicine preparation may be achieved while satisfying degree requirements in animal ecology.

Additional education and training can lead to other opportunities in such areas as research and management, natural resources planning and administration, teaching, and environmental consulting, among others. Graduate training is necessary for many specialized positions within the fields of animal ecology. Students preparing for graduate study should consult with their academic adviser concerning appropriate coursework.

Students wishing to be certified by the American Fisheries Society or The Wildlife Society need to consult with their advisors in selecting required courses in their respective programs. The formal application then needs to be completed and submitted for review by their professional societies. Certification in either society has many professional benefits and may be required or recommended for employment by federal and state agencies and private industry.

Students seeking certification to teach biology in secondary schools must meet requirements of the College of Human Sciences as well as those of the Animal Ecology curriculum. In addition, they must apply formally for admission to the teacher education program (see Index, Teacher Education Program ). Students with an interest in careers in outdoor writing are encouraged to obtain a minor or a second major in journalism (see Index, Journalism and Communication, Courses and Programs ). Students who wish to pursue a job as a conservation officer may wish to minor in criminal justice (see Index, Criminal Justice Studies ).

Curriculum in Animal Ecology

Total Degree Requirement: 128 cr.

Only 65 cr. from a two-year institution may apply which may include up to 16 technical cr.; 9 P-NP cr. of free electives; 2.00 minimum GPA.

U.S. Diversity: 3 cr.

International Perspective: 3 cr.

Communications Proficiency (with a C or better):

6 cr. of English composition
3 cr. of speech fundamentals

Communication/Library 16 cr.

- ENGL 150 Critical Thinking and Communication 3
- ENGL 250 Written, Oral, Visual, and Electronic Composition 3
- SP CM 212 Fundamentals of Public Speaking 3

Lib 160 Information Literacy 1

Plus 6 credits from the following:

- ENGL 207 Introduction to Creative Writing
- ENGL 302 Business Communication
- ENGL 303 Free-Lance Writing for Popular Magazines
- ENGL 304 Creative Writing: Fiction
- ENGL 305 Creative Writing: Nonfiction
- ENGL 306 Creative Writing: Poetry
- ENGL 309 Report and Proposal Writing
- ENGL 310 Rhetorical Analysis
- ENGL 312 Biological Communication
- ENGL 314 Technical Communication
- AGEDS 311 Presentation and Sales Strategies for Agricultural Audiences
- JL MC 201 Reporting and Writing for the Mass Media
- P R 305 Publicity Methods
- NREM 330 Principles of Interpretation
- SP CM 312 Business and Professional Speaking
- SP CM 313 Communication in Classrooms and Workshops

Humanities and Social Sciences: 6 cr.

- Approved humanities course 3
- Approved social science course 3

Total Credits 6

Ethics: 3 cr.

3 cr. from approved ethics list.

Mathematical Sciences: 6 cr.

- MATH 140 College Algebra 3
- MATH 145 Applied Trigonometry 3
- STAT 101 Principles of Statistics 3
- or STAT 104 Introduction to Statistics 4

Total Credits 9-10

Physical Sciences: 13-14 cr.

- CHEM 163 College Chemistry 5
- & 163L and Laboratory in College Chemistry 5
- or CHEM 177 General Chemistry I 4
- & 177L and Laboratory in General Chemistry I 4
- CHEM 231 Elementary Organic Chemistry 4
- & 231L and Laboratory in Elementary Organic Chemistry 5
- or CHEM 331 Organic Chemistry I 5
- & 331L and Laboratory in Organic Chemistry I 5
- PHYS 115 Physics for the Life Sciences 5
- & 115L and Laboratory in Physics for the Life Sciences 5
- or PHYS 111 General Physics 5

Total Credits 14

Biological Sciences: 20 cr.

- NREM 110 Orientation in Natural Resource Ecology and Management 1
- NREM 120 Introduction to Renewable Resources 3
- NREM 211 Careers in Natural Resources 1
- A ECL 312 Ecology 4
- A ECL 365 Vertebrate Biology 3
- BIOL 211 Principles of Biology I 3
- BIOL 211L Principles of Biology Laboratory I 1
- BIOL 212 Principles of Biology II 3
- BIOL 212L Principles of Biology Laboratory II 1

Total Credits 21

Practical Experience:

Fisheries and Aquatic Sciences option

- A ECL 321 Fish Biology 3
- A ECL 486 Aquatic Ecology 3
Interpretation of Natural Resources option

A ECL 488L Aquatic Ecology Laboratory 1
One of the following:
  MATH 160 Survey of Calculus 4
  MATH 165 Calculus I
  MATH 181 Calculus and Mathematical Modeling for the Life Sciences I
Plus 20 credits from approved list 20
Total Credits 31

Wildlife option

A ECL 371 Ecological Methods 3
A ECL 451 Wildlife Ecology and Management 3
BIOL 313 Principles of Genetics 3
or GEN 320 Genetics, Agriculture and Biotechnology
or NREM 315 Genetics for Natural Resource Managers.
BIOL 366 Plant Systematics 4
One of the following:
  MATH 160 Survey of Calculus 4
  MATH 165 Calculus I
  MATH 181 Calculus and Mathematical Modeling for the Life Sciences I
Six hours from the following: 6
  A ECL 457 Herpetology
  A ECL 458 Ornithology
  A ECL 458L Ornithology Laboratory
  A ECL 459 Mammalogy
  A ECL 459L Mammalogy Laboratory
Three hours from the following: 3
  A ECL 415 Ecology of Freshwater Invertebrates, Plants, and Algae
  A ECL 454 Principles of Wildlife Disease
  A ECL 516 Avian Ecology
  A ECL 551 Behavioral Ecology
  ANTHR 438 Primate Evolutionary Ecology and Behavior
Five hours from the following: 5
  A ECL 415 Ecology of Freshwater Invertebrates, Plants, and Algae
  AGRON 317 Principles of Weed Science
  BIOL 355 Plants and People
  BIOL 454 Plant Anatomy
  BIOL 456 Principles of Mycology
  BIOL 474 Plant Ecology
  EEOB 584 Wetland Ecology
  FOR 356 Dendrology
Plus additional credits from approved list to total 42 credit hours. 1
Total Credits 38

Minor - Animal Ecology

The department offers a minor in animal ecology that may be earned by taking 15 credits in the department including:

A ECL 312 Ecology 4
A ECL 365 Vertebrate Biology 4
NREM 120 Introduction to Renewable Resources 3
Plus four additional credits of Animal Ecology or NREM courses at the 300 level or above.