



# Aquatic Ecology

Imagine a career studying how plant and animal communities in the rainforest streams of Trinidad adjust to climate change or how drought affects the ecology of Nebraska Sandhills lakes! Realize your career goals through our aquatic ecology option.

Make an appointment with one of our faculty advisors to learn more about the Water Science degree program.

WATER SCIENCE  
DEGREE PROGRAM

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*College of Agricultural  
Sciences  
and Natural Resources  
(<http://casnr.unl.edu>)*

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*School of Natural Resources*

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## Career Path

Research Scientist and Field Biologist in public, private and non-profit organizations. Research Technician for a public agency or a Consultant.

## Special Emphasis Courses

Ecosystem Ecology, Natural Resources Policy, Fisheries Science, Chemistry of Natural Waters, Limnology, Wetlands, River and Stream Ecology, Freshwater Algae, Aquatic Insects, Lake and Reservoir Restoration, Ichthyology

## Internships Available

Students have enjoyed internships with Nebraska's natural resource districts, the Nebraska Department of Environmental Quality, consulting firms, the U.S. Geological Survey, and other state and federal agencies.



University of Nebraska–Lincoln

## Water Science

**Coordinator:** Dr. Aris Holz, 502 Hardin Hall, 472-8182, aholz2@unl.edu

**Water Science Curriculum Committee:**  
Eisenhauer, J.Holz, Lenters, Lubben

The major in water science is designed to educate students in basic and applied sciences related to water resources. The goal is to teach individuals to gather and synthesize information from several disciplines, to formulate ecologically and economically rational alternatives, and to effectively implement various water-based programs.

The curriculum is designed to meet the needs of students who intend to pursue careers in agencies that form or implement policy at all levels of government, in public and private organizations that manage water and land resources, in private consulting companies that offer water management services and in a broad range of nonprofit institutions that are interested in water resources. The program also provides students the opportunity to prepare for advanced education in several areas of graduate studies.

A minimum of 128 credit hours is required for the bachelor of science degree. Of these requirements, 25-29 credits are in an integrated water science curriculum designed to provide both breadth and depth in water resources. The water science major also requires 25 credit hours of science and mathematics. In addition, the student must select an option area consisting of 18-26 credit hours. To complete the major the student must take 24 credit hours of communication, humanities and social science courses.

Application for UNL freshman scholarships automatically makes you eligible for SNR scholarships. Many scholarships are available, including the Warren Viessman Scholarship for Water Science majors. For more information, visit <http://snr.unl.edu>.

### Major Requirements

#### Natural Resources

|  |              |
|--|--------------|
| <b>Core</b> .....  | <b>24-25</b> |
| NRES/AGRI 103 Intro to Agricultural & Natural Resource Systems.....                        | 3            |
| NRES 220 Principles of Ecology + Lab.....  | 4            |
| NRES 312 Intro to Geospatial Information Sciences (3) or 412 Intro to GIS Systems (4)..... | 3-4          |
| NRES 323 Natural Resources Policy .....  | 3            |
| SOILS 153.....   | 4            |
| WATS 465 Resource & Environ. Econ II .....   | 3            |
| NRES 499 Thesis Research or WATS 498A & 498B Senior Project I & II.....                    | 4            |

**\*\* The senior project or senior thesis fulfills the capstone requirement for water science majors. These courses consist of two credit hours in each of the last two semesters before the student**

*graduates. The senior project is usually provided by private industry, government agencies, or nonprofit organizations. The senior thesis consists of research designed by the student along with the aid of faculty.*

#### Natural Science .....17

|   |   |
|---|---|
| BIOS 101 & 101L General Biology and Lab 4   |   |
| BIOS 109 Gen Botany or BIOS 112 & 112L Intro to Zoology.....                          | 4 |
| CHEM 109 Gen Chem I .....   | 4 |
| MSYM 109 & MYSYM 109 Lab, PHYS 141, PHYS 151 & PHYS 153, or PHYS 211 & PHYS 221 ..... | 5 |

#### Mathematics ..... 8

|   |   |
|---|---|
| Math 106 Analytical Geometry and Calculus I or Math 106B Calculus I for Biology and Medicine..... | 5 |
| STATS 218.....  | 3 |

#### Communications ..... 9

|   |   |
|---|---|
| Written Communications ENGL 150, 151, 254; GJEN 120, 200, or 300 Oral Communications COMM 109, 209, 212, or 311 ..... | 3 |
| Communication and Interpersonal Skills JOUR 444 Science Writing .....   | 3 |

#### Economics .....3

|                                  |   |
|----------------------------------|---|
| ECON 211, 212, or AECN 141 ..... | 3 |
|----------------------------------|---|

#### Humanities & Social Sciences ..... 12

Students should choose one course each in ACE areas 5, 7, 8, and 9 as Humanities and Social Science electives.

#### Water Science

#### Core.....25-29

|  |     |
|--|-----|
| CIVE 353 Hydrology.....  | 3   |
| GEOL 100 (Intro) (3), GEOL 101 (Physical) (4), GEOL 106 (Environmental) (3); NRES 108 (Earth's Natural Resource Systems Laboratory) (3) .....      | 3-4 |
| METR 200 (Weather & Climate) (4), NRES 208 Applied Climate Science (3), or NRES 408 (Microclimate) (3).....  | 3-4 |
| NRES 415 Water Resources Seminar.....  | 1   |
| WATS 281 Intro to Water Science.....   | 3   |
| WATS 354 Soil Conservation and Watershed Mgmt .....  | 3   |
| <i>Law, Policy, and Management</i> (select one of the following).....  | 3   |
| AECN 357 Nat. Res. Environ. Law, CRPL 470 Environ. Planning & Policy, NRES 423 Integrated Resource Mgmt., or WATS 475 Water Quality Strategy ..... | 3   |
| <i>Science and Technology</i> (select two of the following).....   | 6-8 |
| NRES 463 Fisheries Science .....   | 4   |
| NRES 488 Groundwater Geology.....  | 3   |
| WATS 361 Soils, Environment, and Water Quality.....  | 3   |

|   |   |
|---|---|
| WATS 418 Chemistry of Natural Waters .....  | 3 |
| WATS 452 Irrigation Systems Management.....   | 3 |
| WATS 459 Limnology or WATS 468 Wetlands (or students may substitute NRES 496 River and Stream Ecology ) ..... | 4 |

**\*\*Courses taken in the Water Science Core do not count toward the Water Science Options.**

|                                      |        |
|--------------------------------------|--------|
| Major Subtotal .....                 | 98-103 |
| Option Requirements & Electives..... | 18-26  |
| Free Electives.....                  | 0-12   |
| Total Credit Hours to Graduate.....  | 128    |

#### OPTIONS

Students must consult with an advisor to select an option prior to the beginning of their junior year.

**\*\*Courses taken in the Water Science Options do not count toward the Water Science Core.**

#### Aquatic Ecology Option.....18-20

This option is designed for students interested in lake, river, stream, or wetland ecology. Students are prepared for careers as research scientists or technicians with public agencies, private consulting firms and non-profit organizations. Completion of this program provides excellent preparation for graduate study.

#### Requirements.....15-16

|  |     |
|--|-----|
| BIOS 109 or BIOS 112 & 112L.....   | 4   |
| BIOS 457 Ecosystem Ecology (4) or GEOL 424 Biogeochemical Cycles (3).....                | 3-4 |
| CHEM 110 General Chemistry II.....   | 4   |
| WATS 459 Limnology (or students may substitute NRES 496 River and Stream Ecology ) ..... | 4   |
| <i>Select one of the following electives.....</i>  | 3-4 |
| BIOS 473 Freshwater Algae.....   | 4   |
| NRES 402 & 402L Aquatic Insects.....   | 4   |
| NRES 470 Lake and Reservoir Restoration.....   | 3   |
| NRES 468 Wetlands.....   | 4   |
| NRES 489 Ichthyology.....  | 4   |

Free electives.....5-12