

WATER RESOURCES PLANNING AND MANAGEMENT GRADUATE SPECIALIZATION

Interested in diving further into the field of water resources planning and management?

This interdisciplinary graduate-level minor requires only 9 credit hours and offers the opportunity to network with other academic departments and experience their differing perspectives on managing water resources. This specialization is supervised by a committee representing 11 participating departments. Your degree must be in one of these departments, and your 9 credit hours need to be courses offered by the other departments. Also, 6 of the 9 credit hours must be from the committee-approved list below. The remaining 3 credit hours can be chosen from the more extensive list of water-related courses found in the graduate catalog.

AECN 857, Water Law
AGRO 807, Plant-Water Relations
AGRO 808, Microclimate: The Biological Environment
AGRO 875, Water Quality Strategy
BIOS 600; NRES 859, Limnology
AGEN 853, Irrigation and Drainage Systems Engineering
AGEN 954, Watershed Modeling
BSEN 957, Modeling Vadose Zone Hydrology
MSYM 852, Irrigation Systems Management
CIVE 830, Fundamentals of Water Quality Modeling

CIVE 852, Water Resources Development
CIVE 854, Hydraulic Engineering
CIVE 855, Nonpoint Source Pollution Control
CIVE 856, Surface Water Hydrology
CIVE 858, Groundwater Engineering
CRPL 870, Environmental Planning & Policy
GEOG 884, Water Resources Seminar
GEOL 888, Groundwater Geology
NRES 853, Hydrology
NRES 868, Wetlands

“One of the things I appreciated was that it was, by design, interdisciplinary. I met several people I ended up working with later while taking these classes, it really set me up for my career going forward.”

**RACHAEL HERPEL, ASSISTANT DIRECTOR,
NEBRASKA WATER CENTER**

For more information, contact the committee member in your department as listed below. You can also contact Dr. Chittaranjan Ray, director of the Nebraska Water Center within the Daugherty Water for Food Global Institute, who serves as chair of the interdepartmental committee, or Dr. Thomas Franti, associate professor of Biological Systems Engineering, who serves as committee co-chair.

- ◆ **Agricultural Economics:** Karina Schoengold
- ◆ **Agronomy and Horticulture:** Keenan Amundsen
- ◆ **Animal Science:** Sheila Purdum
- ◆ **Biological Sciences:** Brigitte Tenhumberg
- ◆ **Biological Systems Engineering:** Thomas Franti
- ◆ **Civil and Environmental Engineering:** David Admiraal
- ◆ **Community and Regional Planning:** Zhenghong Tang
- ◆ **Economics:** Sam Allgood
- ◆ **Political Science:** Dona-Gene Barton
- ◆ **School of Natural Resources:** Steven Thomas
- ◆ **Sociology:** Jeffrey Smith

“The most amazing moment was in the middle of the semester; I was taking biosystems engineering, civil engineering and geology – each dealing with the flow of water underground – and I had this ‘ah-ha’ moment, where the synergy of the three perspectives came together and I got it!”

**JENNIFER SCHELLPEPER, INTEGRATED WATER
MANAGEMENT DIVISION MANAGER, NEBRASKA
DEPARTMENT OF NATURAL RESOURCES**

Water Resources Planning and Management, Interdepartmental Minor/Specialization

(Interdepartmental Area)

An intra-university masters-level minor/specialization with emphasis on water resources planning and management. Each student will be required to complete: 1) a major in one of the departments with approval to offer option as a minor or specialization; and 2) 9 hours of water resources-related courses from departments outside the student's major field (6 hours of which must be from those courses marked with a "+") and approved by the Water Resources Advisory Committee.

The master's degree will be granted in one of the disciplines. The student must be formally registered in one of the departments with approval to offer the option as a minor or specialization. The recommended master's degree option is I (thesis) but other options may be approved. The minor or specialization can be noted on the student's final transcript, for example, civil engineering (water resources planning and management).

Departments/Program(s) with Approval to Offer Option as a Minor or Specialization:

Agricultural Economics, Agronomy/Horticulture, Animal Science, Biological Sciences, Biological Systems Engineering, Civil Engineering, Community and Regional Planning, Economics, Earth and Atmospheric Sciences, Industrial and Management Systems Engineering, Political Science, School of Natural Resources, and Sociology.

A Water Resources Advisory Committee coordinates the interdisciplinary aspects of the minor/specialization. The Director of the Nebraska Water Center in the Robert B. Daugherty Water for Food Global Institute serves as chair with one member from each participating department. Approval of individual student program of studies, degree option, and thesis topics (if applicable) will have the concurrence of the student's major department and the chair of the advisory committee. One member of the student's examining committee will be appointed from the Water Resources Advisory Committee. This member cannot be from the student's major department.

Water Resources Planning and Management Advisory Committee: Professors Ray (chair); Thomas Franti (co-chair); Matthew Cushing, Department of Economics; Mark Lagrimini, Department of Agronomy and Horticulture; Sheila Purdum, Animal Sciences; Thomas Franti, Department of Biological Systems Engineering; David Admiraal, Department of Civil Engineering; Dona-Gene Barton, Department of Political Science; Deb Brown, School of Biological Sciences; Kim Tyler or Julia McQuillan, Department of Sociology; Karina Schoengold, Department of Agricultural Economics; Steven Thomas; School of Natural Resources; and Zhenghong Tang, Community and Regional Planning Program

Examples of courses in water resources to comprise the 9-hour minor or specialization are listed below according to departments/programs. Course descriptions and prerequisites are contained in the appropriate departmental/program listings.

Courses may require technical prerequisites; check bulletin listings for details. Courses taught by an instructor in the student's major department cannot be used as part of the nine-hours in the minor or specialization.

Offered in the Department of Agricultural Economics

AECN 856. Environmental Law

AECN 857. Water Law+

AECN 865. Resource & Environmental Economics II

Offered in the Department of Agronomy/Horticulture

AGRO 807. Plant-Water Relations+

AGRO 808. Microclimate: The Biological Environment+

AGRO 825. Turfgrass Science & Culture

AGRO 850. Climate & Society

AGRO 855. Soil Chemistry & Mineralogy

AGRO 872. Applied Soil Physics

AGRO 875. Water Quality Strategy+ (CIVE, CRPL, GEOL, MSYM, NRES, POLS, SOCI 875;
SOIL, WATS 484)

AGRO 920. Xenobiotics in the Environment

Offered in the School of Biological Sciences

BIOS 859. Limnology+

BIOS 885. Aquatic Insects

BIOS 889. Ichthyology

Offered by the Department of Biological Systems Engineering

AGEN 853. Irrigation and Drainage Systems Engineering+

AGEN 854. Irrigation Laboratory and Field Course

AGEN 953. Advanced Irrigation and Drainage Systems Engineering

AGEN 954. Watershed Modeling+

BSEN 855. Nonpoint Source Pollution Control Engineering

BSEN 868. Wetlands

BSEN 879. Hydroclimatology

BSEN 957. Modeling Vadose Zone Hydrology+

MSYM 852. Irrigation Systems Management+

MSYM 855. Advanced Irrigation Management

Offered in the Department of Civil Engineering

CIVE 821. Hazardous Waste Management

CIVE 822. Pollution Prevention: Principles and Practices

CIVE 823. Physical/Chemical Treatment Processes in Environmental Engineering

CIVE 824. Solid Waste Management Engineering

CIVE 826. Design of Water Treatment Facilities

CIVE 827. Design of Wastewater Treatment & Disposal Facilities

CIVE 828. Environmental Engineering Chemistry

CIVE 829. Biological Waste Treatment

CIVE 830. Fundamentals of Water Quality Modeling+

CIVE 852. Water Resources Development+

CIVE 854. Hydraulic Engineering+

CIVE 855. Nonpoint Source Pollution Control Engineering (BSEN 855)

CIVE 856. Surface Water Hydrology+

CIVE 858. Groundwater Engineering+

CIVE 916. Interdisciplinary Seminar in Engineering: Economic & Legal Aspects of Water
Resources Systems

CIVE 926. Advanced Topics in Water Treatment

CIVE 927. Advanced Topics in Wastewater Treatment

Offered in the Department of Civil Engineering continued

CIVE 954. Advanced Hydraulics
CIVE 958. Groundwater Mechanics

Offered in the Community and Regional Planning Program

CRPL 833. GIS in Environmental Design and Planning
CRPL 870. Environmental Planning & Policy+
CRPL 871. Environmental Impact Assessment
CRPL 875. Water Quality Strategy+

Offered in the Department of Geography

GEOG 812. Intro to Geographic Information Systems
GEOG 818. Intro to Remote Sensing
GEOG 819. Applications of Remote Sensing in Agriculture & Natural Resources
GEOG 820. Remote Sensing III: Digital Image Analysis
GEOG 822. Advanced Techniques in Geographic Information Systems
GEOG 884. Water Resources Seminar+

Offered in the Department of Earth and Atmospheric Sciences

GEOL 884. Water Resources Seminar+
GEOL 875. Water Quality Strategy+
GEOL 888. Groundwater Geology+
GEOL 889. Hydrogeology
GEOL 987. Seminar in Hydrogeology
GEOL 818. Chemistry of Natural Waters
GEOL 870. Field Techniques in Hydrogeology
GEOL 872. Water in Geosciences
GEOL 917. Environmental Isotope Hydrology
GEOL 986. Contaminant Hydrogeology
GEOL 988. Introduction to Groundwater Modeling
METR 850. Climate & Society
METR 823. Physical Meteorology

Offered in the School of Natural Resources

NRES 808. Microclimate: The Biological Environment+
(AGRO, GEOG, HORT, MSYM, NRES 808)
NRES 810. Landscape Ecology
NRES 853. Hydrology+
NRES 884. Water Resources Seminar+ (AGRO GEOG 884, GEOL 884)
NRES 817. Agroforestry Systems in Sustainable Agriculture
NRES 851. Soil Environmental Chemistry
NRES 852. Climate & Society (AGRO, GEOG 850)
NRES 859. Limnology+ (BIOS 860)
NRES 863. Fisheries Science
NRES 868. Wetlands+
NRES 875. Water Quality Strategy+
NRES 879. Hydroclimatology
NRES 881. Stream and River Ecology
NRES 889. Ichthyology (BIOS 889)
NRES 908. Solar Radiation Interactions at the Earth's Surface
NRES 954. Turbulent Transfer in the Atmospheric Layer (BSEN 958)

Revised August 5, 2019