

# NDSU WATER RESOURCES CERTIFICATE PROGRAM

The water resources certificate is an interdisciplinary program for undergraduate students in their junior and senior years, focusing on water's journey and impact to the environment. The certificate requires 12 credits across key areas in hydrology fundamentals, soil and water contaminants management, and technological advances in water management. The program aims to equip students with the skills to tackle water resources challenges effectively.

## Program Requirements

The Water Resources Certificate Program will require students to take 12 credits of courses from a total of 26 courses (79 credits), which are grouped in three categories (hydrology, soil and water quality, and technology). Through this program, students will be trained to manage the limited water resources for maximum beneficial uses.

The Water Resources Certificate will prepare the students to enter careers in hydrology and water resources management.

HYDROLOGY	SOIL AND WATER QUALITY	TECHNOLOGY
1. ABEN 464 Resource Conservation and Irrigation Engineering. 4 Credits	1. CE 408 Water Resources and Supply. 3 Credits	1. ABEN 482 Instrumentation & Measurements. 3 Credits
2. ABEN 484 Drainage and Wetland Engineering. 3 Credits	2. CE 478 Water Quality Management. 3 Credits	2. CE 476 Watershed Modeling. 3 Credits
3. CE 421 Open Channel Flow. 3 Credits	3. ENVE 460 Environmental Fate and Transport. 3 Credits	3. GEOL/GEOG 465 Remote Sensing of the Environment. 3 Credits
4. CE 474 Groundwater Sustainability Design. 3 Credits	4. GEOL 410 Sedimentology and Stratigraphy. 4 Credits	4. GEOL/GEOG 470 Remote Sensing. 3 Credits
5. CE 477 Applied Hydrology. 3 Credits	5. GEOL/ GEOG 412 Geomorphology. 3 Credits	5. GEOG 455 Intro to GIS. 4 Credits
6. GEOL 414 Hydrogeology 3 Credits	6. GEOL 428 Geochemistry. 3 Credits	6. GEOG 456 Advanced GIS. 3 Credits
7. NRM 402 River and Stream Resource Management	7. SOIL 410 Soils and Land Use. 3 Credits	7. GEOG 480 GIS Pattern Analysis and Modeling. 3 Credits
8. NRM/SOIL/RNG 454 Wetland Resources Management	8. SOIL 433 Soil Ecohydrology and Physics. 3 Credits	8. SOIL 447 Microclimatology. 3 Credits
9. NRM/RNG 453 Rangeland Resources Watershed Management	9. SOIL 444 Soil Genesis and Survey. 3 Credits	

The Water Resources Certificate requires completing a minimal 4 courses (12 credits) from 26 upper-division courses across three areas, with a "C" or better in each and an overall GPA of at least 3.0 to qualify for the certificate.

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## ENROLLMENT REQUIREMENTS

A student pursuing an undergraduate certificate must be enrolled as a degree-seeking student at NDSU. Undergraduate certificates are not awarded prior to the award of an undergraduate degree. A student already holding an undergraduate degree may pursue an undergraduate certificate as a nondegree-seeking graduate student.

## CAREER OUTLOOK

As a land-grant institution, North Dakota State University (NDSU) is dedicated to serving the state and region through education, service, and research. The ND Water Resources Research Institute aims to address two primary goals: training a skilled workforce and assisting the state in solving critical water-related issues. Recognizing the gap in qualified professionals in water resources, the Water Resources Certificate program is designed to prepare students for careers in this vital field, offering a direct link between education and employment.

This program is particularly relevant for students pursuing degrees in Civil, Construction, and Environmental Engineering; Agricultural and Biosystems Engineering; Natural Resources Management, and other related fields. By completing the certificate, students become attractive candidates for roles in state agencies and consulting firms specializing in water resources, with opportunities ranging from paid internships to permanent positions.

NDSU's initiative not only responds to the immediate workforce needs of North Dakota's state agencies but also contributes to the broader goal of managing and preserving water resources efficiently. This strategic alignment with the state's needs underscores the university's commitment to its land-grant mission, facilitating a bridge between academic preparation and practical application in the workforce.



## Program Contact Information

Dr. Xinhua Jia

Director of North Dakota Water Resources Research Institute

Xinhua.Jia@ndsu.edu

701-231-6453