

# CLEAN WATER AND SANITATION

*Ensure availability and sustainable management of water and sanitation for all.*

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125



Publications in SCOPUS

14



Course units

4.9%



Percentage of all Taiwan publications

201



Students who chose the course units

## Research

### Disaster Prevention and Water Environment Research Center

NYCU's Disaster Prevention and Water Environment Research Center has participated in disaster prevention and relevant planning initiatives run by the central government and city/county governments. The center has developed water conservancy-related international collaborations and implemented research plans in the engineering community, serving as a leader on the issues of water conservancy and disaster prevention and relief. The center has also conducted research on several issues, including reservoir water storage safety, river basin protection, coastal topography, and seawall risk assessment. Furthermore, it has continually implemented national-level plans, including key technology R&D and talent training for national reservoir safety assessment operations, the development of a database for water level warnings in rivers and regions managed by the central government, and the promotion of programs such as the "political plan for flood-prone areas." Furthermore, the center has organized international seminars on water environment resources and relevant issues. In addition, it has utilized its research results to help the managing units of the Shihmen Reservoir, Nanhua Reservoir, and Deji Reservoir establish and maintain a "Sediment Transport Monitoring System," needed to support silt control and sand discharge operations. The center's "Dredging Volume Management System" has been widely used in dredging operations at the Nanhua Reservoir, Zengwen Reservoir, Mudan Reservoir, Wushantou Reservoir, and Sun Moon Lake, making key technical contributions to the sustainability of Taiwan's water resources.

### Building Smart Flood Prevention and Resilient Cities

NYCU Assistant Researcher Sheng-Hsueh Yang helped the New Taipei City Government carry out the "Tackling Climate Change Fearlessly—Building Smart Flood Prevention and Resilient Cities" project, integrating IoT and real-time monitoring systems to create a smart flood control platform with functions such as automatic monitoring and rapid system-development integration. These functions allow flood control personnel to quickly obtain water information on their mobile phones and perform follow-up response actions, keeping citizens safe from the threats of climate change. The project received the "Resilience and Innovation Award" in the Ministry of Health and Welfare's "2021 Taiwan Healthy and Age-Friendly City Awards," hailing a new chapter for climate change and water environment monitoring and response.



## Social Impact

### **Paying Attention to Local Water Affairs by Co-Organizing Seminars on Water Development in Taiwan**

The “Environmental Technology and Smart System Research Center,” led by NYCU Distinguished Professor Chih-Pin Huang, co-organized the “2021 Water Affairs Symposium.” This year’s symposium focused on the “Smart Water Forum,” “Water Affairs Technology Forum,” and “Water Industry Development Forum,” where government, industry, and academic leaders in the field of water affairs shared their research and practical experience, thereby boosting mutual interaction and cooperation. The symposium also invited Ambassador Eugene Chien, Chairman of the Taiwan Institute for Sustainable Energy (TAISE), to give a speech on the topic “Prospects for Carbon Neutrality in the Water Industry,” with the aim to promote the future development of water affairs in Taiwan. NYCU students received the “Outstanding Emerging Water Affairs Talent Award” given out at the symposium.

### **Professional Education and Training on Inspections and Safety Evaluations of Water Storage and Water Diversion Structures**

For five consecutive years, NYCU has been commissioned by the Water Resources Agency, Ministry of Economic Affairs (MOEA) to organize the “Professional Education and Training on Inspections and Safety Evaluations of Water Storage and Water Diversion Structures.” Reservoir management units and personnel in charge of reservoir safety at engineering consulting companies are the main participants. In 2021, the three-day training was conducted by the Water Resources Agency, NYCU faculty members and researchers, and engineering consultancy companies. Training courses covered a variety of topics such as “reservoir safety evaluation,” “reservoir slope anchor inspection, maintenance, and management,” and “reservoir risk management introduction” to enhance the attendees’ professional knowledge of reservoir management and safety maintenance personnel, all contributing to enhancing the water safety of people in Taiwan.

## Student Cultivation

### **Cultivating Young Talents in the Fields of Hydrology and Water Conservancy**

NYCU offers courses such as “Water and Wastewater Treatment,” “Water Recycling Technology,” “Water Resources Planning,” “Environmental Hydrogeology,” and “Advanced Hydrology” as the cornerstones for students looking to develop future careers in hydrology or water conservancy. The master’s and doctoral programs at NYCU’s Department of Civil Engineering have also established the “Water Conservancy and Engineering Group” to cultivate research talents in the field of the water environment.

### **Helping Government Units Train Wastewater (Sewage) Treatment Personnel**

The NYCU Institute of Environmental Engineering and the Environmental Technology and Smart System Research Center handle wastewater (sewage) treatment personnel’s training for the Environmental Protection Agency of the Executive Yuan, as well as establish wastewater (sewage) treatment personnel system. In addition, NYCU helps enterprises cultivate specialized wastewater treatment personnel, improving the professionalism in terms of wastewater treatment as well as pollution prevention and management, so that wastewater (sewage) can be properly treated and managed, thereby protecting Taiwan’s ecology and environment.

## Stewardship

### **Creating a Clean and Hygienic Environment for Water Usage on Campus**

NYCU installed over 350 water dispensers that provide cold and hot drinking water across teaching buildings, administrative offices, event centers, sports venues, student dormitories, and staff dormitories. Between its campuses, NYCU has over 200 water towers that can hold a combined total of over 10,000 tons of water. NYCU cleans the water towers each year, and commissions a water quality testing company to test 30 random water dispensers every month for *E. coli* to ensure that students, faculty members, the public, and neighboring residents have convenient access to free and clean drinking water when they are on campus. Public spaces such as activity centers and sports venues also have restrooms with complete drainage facilities, providing clean and safe toilets for students, faculty members, and visitors.