

DIGISKILLS

NEWSLETTER

NO.3

The DIGISKILLS project is driving the digital transformation of water technology education across a diverse consortium of universities. By integrating modern digital tools and innovative teaching methods, the project aims to enhance the quality of higher education and equip students with the practical skills needed in the evolving water sector.

Building on best practices from EU member states, DIGISKILLS will introduce advanced equipment, simulation software, and interactive learning resources to support both in-person and independent study. These efforts are designed to modernize water technology training and boost the competencies and competitiveness of future professionals in the field.

Stay connected with us as we work together to shape a smarter, more sustainable future for water education.



**INNOVATING
WATER
TECHNOLOGY
EDUCATION
WITH DIGITAL
SOLUTIONS**

HIGHLIGHTS



DIGISKILLS PROJECT MANAGEMENT MEETING IN GALATI: STRENGTHENING COLLABORATION AND DRIVING INNOVATION

Between 23–27 March, partners of the DIGISKILLS project gathered in Galați for the Third Steering Committee (SC), Project Management Committee (PMC), and Quality Assurance Committee (QAC) Meetings. The event brought together project teams for an intensive week of collaboration, reflection, and forward planning.

The first working day, held on 24 March, opened with a warm welcome from the host institution and introductory remarks from the project coordination team. Participants were presented with the objectives of the meeting, setting the tone for a productive and engaging agenda. A key highlight of the day was the workshop “Digital tools in education: Enhancing learning experience”, designed as a theme-based training session for teaching staff. The workshop focused on strengthening digital competencies, promoting the use of innovative tools in education, and facilitating the exchange of best practices among partners. The day continued with interactive discussions and brainstorming sessions addressing current challenges, opportunities, and future directions. In parallel, partners reviewed administrative aspects, interim reporting requirements, and progress within Work Packages 1 and 2.

On 25 March, discussions shifted towards advancing the project’s core activities, with a particular focus on Work Package 3. Partners evaluated ongoing results, shared feedback, and outlined the next steps to ensure steady progress. The programme also included a follow-up workshop on “Digital Water Education”, offering participants further hands-on experience with digital tools and innovative teaching approaches.

The day fostered strong engagement and constructive dialogue, reinforcing collaboration and supporting the development of high-quality project outcomes.

The final working day, 26 March, focused on smart surveillance and control in water management, while also addressing the planning of upcoming project phases. The sessions included an introduction to best practices, followed by in-depth discussions on implementation status, key challenges, bottlenecks, and opportunities moving forward. The DIGISKILLS Project Meeting – Session 3 brought together project teams alongside PMC, PSG, and QAC members to align priorities and define the path ahead.

With clear directions established for the next six months, the meeting concluded on a strong and forward-looking note—driven by collaboration, shared expertise, and a common vision for smarter, digitally enhanced water management.

EDUCATIONAL INNOVATION



After sampling and measurements of some parameters on site, all water samples were processed in the laboratory and the traditional hydrochemical parameters and kinetic parameters characterizing the intensity of chemical self-purification processes of natural waters were determined. Then the results obtained were compared and analyzed with multiannual average data in order to assess the state of surface waters and their pollution level.

The students' activities fit perfectly into the Erasmus+ DIGISKILLS project.

PRACTICAL ACTIVITIES OF STUDENTS IN THE DISCIPLINE OF CHEMISTRY OF NATURAL WATERS

2nd year students, specialty Industrial Chemical Technology from the Faculty of Chemistry and Chemical Technology of the Moldova State University participated in a hydrochemical expedition to take samples from various aquatic objects of the Dniester River basin.

The mission of the delegation – field research of the quality of the Dniester waters, its tributaries and aquatic objects in the Dniester basin.

Multiple samples were taken from the intakes – the mouths of the Răut, Ichel rivers, as well as water samples from the Dniester, from their upstream and downstream. Multiple water samples were taken from Lake Dănceni (the Ișnovăț river basin) and from the Ghidighici reservoir (the Bîc river basin). Under field conditions, the diurnal dynamics of temperature, pH, Eh, changes in dissolved oxygen content and hydrogen peroxide were determined.



EDUCATIONAL INNOVATION



Національний технічний університет України
«Київський політехнічний інститут імені Ігоря Сікорського»

Кафедра технологій неорганічних речовин,
водоочищення та загальної хімічної технології



**Перспективи використання
інструментів штучного інтелекту для
вирішення проблем водопідготовки**

20.05.2026
Київ

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Керівник:
Д.т.н., проф., Тетяна ДОНЦОВА

NEW RESEARCH DIRECTION LAUNCHED AT IGOR SIKORSKY KYIV POLYTECHNIC INSTITUTE WITHIN THE DIGISKILLS PROJECT

Within the international project Strengthening digital skills in the water sector higher education (DigiSkills), a new stage of research activity has started at the Department of Inorganic Substances Technology, Water Purification, and General Chemical Technology, National Technical University of Ukraine Igor Sikorsky Kyiv Polytechnic Institute. One of its key directions is the integration of artificial intelligence tools into water treatment and water management research, which marks an important step in combining digital transformation with modern engineering education.



Методологія експериментів

Технологія ШІ – LLM на основі підходу RoBERTa (покращена версія BERT).



Клас мережі	Кількість шарів	Кількість нейронів у шарах			Функція активації
		вхідному	проміжному	вихідному	
LLM, Трансформер, Фундаментальна модель	12	768	9216	1	GELU
					Softmax

- Мова програмування – Python;
- Робочі середовища – Kaggle та Google Colab;
- Процес – навчання (тренування, валідація, тестування), експериментальне використання.

This new research focus is reflected in the scientific article “Perspectives of Using Artificial Intelligence Technologies in the Water Industry” (<https://doi.org/10.20535/2218-930012026350314>).

The study highlights the most promising AI technologies for the water sector, with particular attention to artificial neural networks, their subtypes, and large language models. The authors identify three main areas of AI application in the water industry: predictive analytics, real time monitoring, and user interaction. The article also demonstrates that AI based approaches can ensure high accuracy of modelling and forecasting, with performance indicators reaching $R^2 = 0.9$ and higher, while also contributing to system optimisation, including cost reductions from 10% to more than 30%, lower energy consumption, and more efficient monitoring and control processes.

An especially important milestone of this new phase was the first defence of a master’s thesis prepared within the DigiSkills project on the topic “Prospects for the Use of Artificial Intelligence Tools to Solve Water Treatment Problems.” This defence became a significant academic result of the project and a clear indication that DigiSkills is already contributing not only to curriculum development and digital capacity building, but also to the emergence of new research topics at the intersection of digital technologies and the water sector.



Участь у проєкті і публікації

- Дисертаційна робота виконувалася в рамках Erasmus+ KA2 проєкту DigiSkills (ID 101178708) за фінансової підтримки Європейської комісії та Національного проєкту 0124U001095 за фінансової підтримки Міністерства освіти і науки України.
- Результати роботи були оприлюднені на Міжнародній конференції «Водні технології: від традиційних методів до сучасних тенденцій». За темою роботи було опубліковано тези конференції та статтю в журналі «Water and Water Purification Technologies. Scientific and Technical News».



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The launch of this research direction at KPI demonstrates how the DIGISKILLS project fosters innovation in higher education and supports the training of a new generation of specialists capable of applying digital tools and AI solutions to contemporary challenges in water treatment. It also confirms the project’s role as a platform for advancing research, strengthening academic excellence, and promoting the modernisation of water sector education in line with current technological trends.

EDUCATIONAL INNOVATION

DIGITALISATION OF THE WATER SECTOR: NEW KNOWLEDGE PATHWAYS WITHIN DIGISKILLS

Within the international project Strengthening digital skills in the water sector higher education (DigiSkills), participants continue to deepen their knowledge of digitalisation in the water sector and explore how advanced technologies can support both education and professional practice. One of the most promising areas of this work is the growing use of artificial intelligence in water treatment and water management.

Today, digital tools are opening new opportunities for the water sector. Artificial intelligence can support predictive analysis, improve real time monitoring, enhance decision making, and simplify interaction with complex technical data. Special attention is being given to technologies such as artificial neural networks, large language models, digital twins, and intelligent monitoring systems, which can help make water infrastructure more efficient, adaptive, and responsive.

A particularly important advantage of digitalisation is its ability to improve forecasting and operational control. AI based models can be used to predict system behaviour, optimise treatment processes, reduce energy and chemical consumption, and respond faster to failures or contamination risks. At the same time, digital tools can support better visualisation and communication of data, making water management processes more understandable for engineers, researchers, and other users.

At the same time, the development of digital solutions in the water sector also requires careful attention to possible risks. Among the key challenges are data quality and availability, cybersecurity, implementation costs, staff training, ethical concerns, and the need to integrate new tools into existing systems. These issues show that digital transformation is not only a technological process, but also an educational and organisational one.



For DIGISKILLS, this direction is especially important because it strengthens the capacity of higher education institutions to prepare a new generation of specialists who can work confidently with digital technologies in the water sector. By combining academic knowledge, research, and innovation, the project contributes to a more modern, resilient, and future oriented approach to water sector education.

Source: www.ecocleanua.com

EDUCATIONAL INNOVATION

LPNU LAUNCHES NEW BACHELOR'S PROGRAM IN WATER TREATMENT ENGINEERING FOR 2026

In 2026, the Department of Chemistry and Technology of Inorganic Substances of the Lviv Polytechnic National University will begin implementing a new educational program for bachelors "Technology and Engineering of Water Treatment Systems".

The curricula of the training courses were developed in advance, even at the stage of considering the educational program. But participation in the Digiskills educational project made it possible to significantly modernize the training courses. For example, the issue of digitization was implemented in such courses as "Water Resources Basin Management Technologies", "Calculations and Design of Water Treatment Equipment and Technologies", "Water Treatment Process Control Systems", etc.

STRENGTHENING WATER SCIENCE: LPNU DEVELOPS NEW EDUCATIONAL AND SCIENTIFIC CENTER

The Department of Chemistry and Technology of Inorganic Substances, taking into account the developments under the DIGISKILLS project, is creating the **Educational and Scientific Center "Modern Water Treatment Technologies"**. Significant progress in the creation of this center is facilitated by the prospect of obtaining analytical equipment for the analysis of natural and wastewater with the financing of the DIGISKILLS project.

Together with the existing equipment, the new equipment will significantly expand the possibilities of conducting analytical studies of water quality not only in laboratory conditions, but also directly on water bodies. In addition, scientific research on the development of new technologies for the purification of natural and conditioning of various wastewaters will receive a powerful impetus.

All this together will make it possible to ensure effective training of specialists in water technologies for the chemical, energy and other sectors of the economy of Ukraine and Europe.



У Національному університеті «Львівська політехніка» на кафедрі хімії і технологій неорганічних речовин започаткована
Нова освітня програма бакалаврського рівня
"ТЕХНОЛОГІЇ ТА ІНЖИНІРИНГ СИСТЕМ ВОДООЧИЩЕННЯ" (2026 р.)
Спеціальність: G2 Технології захисту навколишнього середовища
Галузь знань: G Інженерія, виробництво, інфраструктура

Доступ до змісту освітньої програми:
<https://lpnu.ua/sites/default/files/2025/program/34224/oppbaktiv2026.PDF>

Сторінка кафедри хімії і технологій неорганічних речовин на офіційному сайті Національного університету «Львівська політехніка»: <https://lpnu.ua/tetr>



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ЗАПРОШУЄМО на НАВЧАННЯ !!!

CONFERENCES & EVENTS



ADVANCING WATER SCIENCE: HIGHLIGHTS FROM THE 24TH CARPATHIAN REGION CONFERENCE

With the assistance of the DIGISKILLS project under the auspices of the Ministry of Education and Science of Ukraine, the 24th International Scientific and Practical Conference "NATURAL WATERS RESOURCES OF THE CARPATHIAN REGION/Problems of protection and rational use/" was held at the Lviv Polytechnic National University at the Department of Chemistry and Technology of Inorganic Substances. The name of the conference is traditional, since the organization of the first Conference. However, over time, the range of participants and the issues have expanded, reaching the scale of all of Ukraine and many countries of Europe and the world (Moldova, Slovakia, Sweden, Romania, India, the USA and many others).

The main topics of the conference: resources of natural waters and their ecological condition; hydrothermal and hydroenergetic resources; recreational and balneological potential of the Carpathian region, Ukraine, Europe; modern technologies of drinking water and water treatment technologies for industrial enterprises; water supply and problems of rational use of fresh water; modern methods and technologies for wastewater treatment and disposal; integration of the natural water research with priorities of the European Union; engineering aspects of water treatment, water supply andAs in the past annual Conference, in accordance with the project objectives, one of the areas of the conference concerned education in the water sector, in particular the issues of digitalization of water education.

Following the results of the Conference, a collection of abstracts of scientific reports (volume 209 p.) was published and a collective monograph (volume 286 p.) is being prepared for publication.

The conference was held in a mixed offline-online format. In particular, online reports were made by our colleagues from the Institute of Chemical Technology (India, Mumbai).

The plenary sessions were held in the auditorium, where in 2012 the first woman - Nobel Prize winner - Marie Skłodowska-Curie gave an inaugural lecture after being awarded the title of Honorary Doctor (Doctor Honoris Causa) of Lviv Polytechnic drainage.

CONFERENCES & EVENTS



WATER INNOVATIONS FOR COMMUNITIES: SOLUTIONS FOR WATER SUPPLY AND WASTEWATER MANAGEMENT

On 28–29 April 2026, the National University of Water and Environmental Engineering hosted the hackathon “Climate-Oriented Resource-Efficient Solutions”, organized within the framework of the LIFE-U-SPRINGBOARD project. The event brought together representatives of local communities, municipal utilities, water supply and wastewater service providers, as well as experts and researchers to identify innovative technological and managerial solutions aimed at improving water infrastructure efficiency and promoting the sustainable use of water resources.

The hackathon was supported by a team of experts and mentors from the National University of Water and Environmental Engineering, including Serhii Martynov, Head of the Department of Water Supply, Wastewater Management and Drilling Engineering; Alla Kucheroва, Head of the Project Office; Ihor Statnyk, Associate Professor of the Department of Ecology, Environmental Protection Technologies and Forestry; Andrii Podlevskyi, Vice-Rector for Development and Communications; and Mykola Kizieiev, Head of the Department of Heat and Gas Supply, Ventilation and Energy Auditing.

Participants included representatives of local self-government authorities and municipal institutions from the Zdolbuniv, Rivne and Kostopil communities of Rivne Region, the Turka City Local Community of Lviv Region, as well as engineers and environmental specialists from Rivne Regional Water Utility (Rivneoblvodokanal) and Zdolbuniv Water Utility (Zdolbunivvodokanal).

Over the two days hackathon, participants worked collaboratively on practical solutions related to the modernization of water infrastructure, digitalization of water supply and wastewater systems, improvement of energy efficiency, and implementation of resource-saving technologies. Particular attention was given to developing innovative approaches that can help communities adapt their water management systems to climate change challenges and increasing service demands.

The hackathon resulted in the development of strategic roadmaps, project concepts, and concrete initiatives, while also identifying opportunities for future investment and grant funding. The event served as an important platform for knowledge exchange among researchers, water sector professionals, and community representatives, fostering new partnerships and laying the groundwork for the implementation of innovative solutions in water supply and wastewater management.



BUILDING SYNERGIES



STRENGTHENING DIGITAL AND RESEARCH CAPACITIES FOR THE WATER SECTOR: SYNERGIES BETWEEN DIGISKILLS AND SMART4ENV AT THE SCIENCE CAFÉ

During the SMART4ENV Science Café, Prof. Harsha Ratnaweera from the Norwegian University of Life Sciences (NMBU) showcased the DIGISKILLS project, highlighting the growing importance of digital competencies in addressing current and future challenges in the water sector. As water utilities, research institutions, and higher education systems increasingly adopt digital technologies, there is a parallel need to strengthen both institutional and researcher capacities in order to effectively respond to complex environmental, technological, and societal demands.

The presentation emphasized clear synergies between DIGISKILLS and SMART4ENV. Both projects are funded by the European Commission and address closely related priorities under the European agenda for green and digital transitions in higher education and research. While SMART4ENV focuses on advancing Smart Environmental Solutions through research excellence, innovation, and international collaboration, DIGISKILLS contributes by strengthening the digital skills base required to design, implement, and sustain such solutions. Together, they reinforce a systems-level approach where technological innovation is matched with human and institutional capacity development.

In particular, both initiatives contribute to building institutional and researcher capacities across European and partner countries, ensuring that higher education institutions are better equipped to support innovation in the water sector.

This includes enhancing competencies in data-driven decision-making, digital environmental monitoring, and integrated water management approaches that are essential for addressing challenges such as climate change, water scarcity, infrastructure resilience, and regulatory compliance.

By promoting DIGISKILLS during the Science Café, Prof. Ratnaweera underlined the importance of aligning capacity-building initiatives with applied research efforts. The event provided a valuable platform to strengthen collaboration among European Commission-funded projects, foster knowledge exchange, and highlight the shared objective of enabling a digitally skilled and research-ready ecosystem capable of transforming the water and environmental sectors.

BUILDING SYNERGIES



By bridging sectors and aligning goals, they contribute to building resilient, sustainable, and digitally empowered communities.

The conference provided an important platform for knowledge exchange, dissemination of results, and the strengthening of partnerships. It also reinforced a central message: the future of higher education lies at the intersection of sustainability, digitalisation, innovation, and international collaboration.

PROJECT SYNERGIES DRIVING CHANGE: DIGISKILLS AT THE ENRICHER HUBS CONFERENCE

DIGISKILLS was proudly presented by Tatiana Bulimaga, head of the Department of International Relations at MSU during the 2nd Dissemination Conference of the Erasmus+ project ENRICHER hubs, where it featured prominently in a panel dedicated to synergies between European initiatives supporting the twin green and digital transition.

The session brought together experts and project representatives to explore how collaborative efforts across sectors can accelerate progress toward a more sustainable and digitally advanced future. In this context, DIGISKILLS and ENRICHER hubs demonstrated strong complementarity, highlighting their shared contributions to several key priorities:

- Advancing sustainable development and supporting the European Green Deal
- Driving the digital transformation of higher education
- Fostering innovation-driven learning environments
- Strengthening collaboration between universities and businesses
- Equipping students and academic staff with future-oriented skills

DIGISKILLS focuses on enhancing digital competencies and modernising education in the water sector through the integration of innovative technologies. Meanwhile, ENRICHER hubs promotes sustainable tourism, experiential learning, and the development of green innovation ecosystems.

Together, these initiatives illustrate the power of interdisciplinary cooperation in addressing complex societal challenges.

PROJECTS & PARTNERSHIPS

DIGITAL AND GREEN SOLUTIONS FOR REBUILDING UKRAINE'S WATER SECTOR – NEW INTERNATIONAL PROJECT!

In early 2026, participants in the DIGISKILLS project from Norwegian University of Life Sciences (As, Norway), Ukrainian State University of Science and Technologies (Dnipro, Ukraine), National University of Water and Environmental Engineering (Rivne, Ukraine), National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" (Kyiv, Ukraine), National University "Lviv Polytechnic" (Lviv, Ukraine) and the NGO "All-Ukrainian Water Association WaterNet" submitted an application for funding of the project Digital and Green Solutions for Rebuilding Ukraine's Water Sector (DigiGreen4Water) under the Nansen EDU – Norwegian-Ukrainian Cooperation in Higher Education program, funded by the Norwegian Directorate for Higher Education and Skills.

And on May 22, the results of the competitive selection were announced. The project took third place among 73 other applications and, together with 15 other selected projects, received funding!

The main project objective is to strengthen the water sector of Ukraine and strengthen universities water programs during the war. The project implementation involves using Norway's experience in water resources management to address the challenges in the water sector of Ukraine related to the war, protect critical infrastructure and the human right to water. Multifaceted activities will contribute to the development of educational, digital and entrepreneurial potential for needs analysis, knowledge dissemination, and support for post-conflict recovery.

The implementation of the tasks set in the project will be carried out, including through training of teaching staff and students, updating the educational content of study programs and laboratory equipment of the department, strengthening ties with water industry enterprises and territorial communities. The project activities will cover both universities teachers who will be involved in its implementation and students of study programs in the water sector of universities who will have the opportunity to study at the summer school at the Norwegian University of Life Sciences.

Another important task of the project is the development of new micro-qualification courses on water issues:

1. Digital transformation of water supply and wastewater services and utilities;
2. Innovative solutions for water supply and sanitation - man-made and natural catastrophic emergencies;
3. Innovative solution for resource recovery and utilization;
4. Green technologies in the water sector.

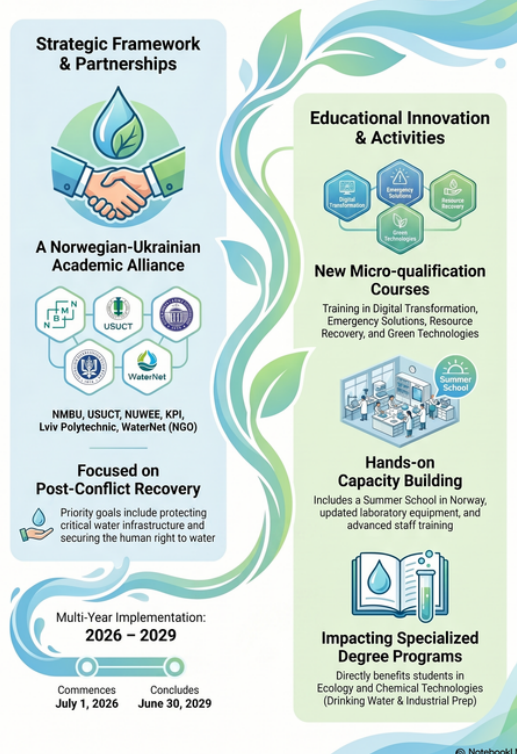
The direction of developing micro-qualification courses for the implementation of the educational paradigm - lifelong learning - is relatively new for Ukraine, so the successful implementation of such courses in universities can provide an impetus for their scaling and use for other areas and specialties.

The project implementation will begin on 01.07.2026 and last until 30.06.2029.

Digital and Green Solutions for Rebuilding Ukraine's Water Sector

Nansen EDU - Norwegian-Ukrainian Cooperation

2026–2029 initiative uniting Norwegian and Ukrainian academic institutions to rebuild Ukraine's water sector, focusing on post-conflict recovery, critical infrastructure protection, and green, digitalized water management solutions.



PROJECTS & PARTNERSHIPS



PUBLIC SERVICES START WITH WELL-TRAINED PEOPLE

The water supply and sanitation sector in the Republic of Moldova has been completed with 49 new qualified specialists, trained at UTM - Technical University of Moldova, with the support of the "Security of Water Supply and Sanitation in Moldova" project (SWSSM)).

Today, they received their graduation certificates during a ceremony held at the Faculty of Urban Planning and Architecture.

The SWSSM project manager, Vadim Ciubotaru, together with the Rector of TUM, Viorel Bostan, the Director of the TUM University Center for Continuing Education, Rodion Ciupercă, and the Head of the Water and Sanitation Policy Department at Ministry of Infrastructure and Regional Development, Sergiu Tăbăcaru, joined the graduates and congratulated them on their academic achievements.

During the 12- and 18-months study programs, participants developed their skills in areas essential for the operation of water supply and sewage systems – from withdrawal of water and distribution to wastewater collection and treatment. The training concluded with the presentation of graduation theses, focused on practical solutions for the development of the sector.

The program was implemented under the Cooperation Agreement between the Ministry of Infrastructure and Regional Development, the Technical University of Moldova and the "Moldova Apă-Canal" Association and is part of Subcomponent 2.1 of the SWSSM project.

Congratulations to all graduates! We were happy to support the training of professionals in a strategic field for the Republic of Moldova.



Vadim Ciubotaru: "Investments in infrastructure need well-trained people. That is why, through the SWSSM project, we are not only building water supply and sewage infrastructure, but also contributing to the training of specialists who will ensure its efficient and sustainable operation."



Closing Thoughts

As the DIGISKILLS project moves into its next phase, its results are becoming increasingly visible and impactful. From the development of new educational programs and the establishment of modern research centers to the integration of digital technologies into teaching and learning, the project continues to transform water education in Ukraine and Moldova.

Universities are actively enhancing their capacities, equipping laboratories, and introducing innovative approaches that connect academic knowledge with real-world challenges. At the same time, international collaboration remains a key strength, fostering the exchange of expertise and best practices across borders.

Together, we are building a strong foundation for future professionals in the water and environmental sectors.

Digital Technologies

Applying modern digital tools, equipment, and software in water technology education.

Innovative Teaching

Using simulations, visualizations, and best pedagogical practices to enhance learning experiences.

Skills & Education Modernisation

Updating curricula and infrastructure to improve student competencies and align education with industry needs.



National University of
Water and Environmental
Engineering



FACEBOOK



LINKEDIN

<https://www.waterharmony.net/projects/digiskills/>