



The Water and Environmental Studies Institute (WESI) at An-Najah National University (ANU) was established in June 2001, as a result of upgrading the Water and Environmental Studies Center founded in 1994.

WESI is a stand-alone institute that operates within an academic environment and collaborates with government and private sectors, research institutes, and local communities along with inter-national entities to address technical aspects of water and environmental related issues. This is accomplished through field and office research using laboratories, computer facilities, and office space.

The research, education, and outreach efforts are funded through university, projects, research grants, environmental and water laboratories analysis and contracts from different sources.

## MISSION STATEMENT

The mission of WESI includes the following activities:

- Supervise and manage the two Master programs: MSc. program of Water and Environmental Engineering and MSc. program of Environmental Sciences offered at ANU.
- Develop research plans and priorities to highlight the water and environmental problems in Palestine and the methods of solving them.
- Facilitate research that supports education and teaching within the university environment.
- Carry out environmental impact assessment studies, evaluation, assignments, training courses, seminars, workshops, public awareness programs, and research projects.
- Strengthen the partnership with Palestinian Authority institutions through long term agreements.
- Offer consultancy services to local and international organizations and entities in the area of studying, reviewing, evaluating, monitoring, supervising and designing projects and plans related to water resources and environmental systems.

## THE ACADEMIC MISSION

WESI has the largest postgraduate program in the field of water and environmental engineering in Palestine. In the MSc. program in Water and Environmental Engineering the candidate concentrates on surface and subsurface hydrology, engineering probability and statistics, aquatic chemistry, water and wastewater treatment, sanitation and public health, water quality lab, advanced hydraulic engineering, hydraulic structures design, sediment transport, water resources management, irrigation and drainage systems, solid waste management, water quality modeling, and environment impact assessment.

The MSc. program in Environmental Sciences is multidisciplinary and is designed in such a way that an interested individual, with BSc. degree, can join the program

and benefit from it. The program covers areas of general environmental sciences including natural resources management, environmental law, public health and sanitation, environment social impact assessment, applied statistics, wildlife protection and management, soil-water- plant relationship, land reclamation, environmental pollution and pesticides, waste management, instrumental analysis, mathematical ecology, water resources management, water quality control, and air pollution control.

## RESEARCH ACTIVITIES AND INTERESTS

WESI research activities and interests focus on Palestinian water resources and environmental systems. Such activities and interests include, but are not limited to, the following:

- Surface water and groundwater modeling and management using appropriate models
- Water resources planning and management
- Qualitative and quantitative catchment analysis
- Spatial and temporal rainfall analysis including drought analysis
- Rainfall variation and climate change
- Integrating microwave link data for analysis of precipitation in Palestine
- Rainwater harvesting and managing aquifer recharge
- Flood risk analysis and mapping
- GIS application in water and environmental research
- Development of agricultural best management practices to preserve groundwater quality
- Impact of untreated wastewater on natural water bodies
- Environmental and social impact assessment
- Desalination of brackish water using renewable energy resources
- Planning, design and assessment of using domestic biogas units
- Water quality assessment and modeling
- Water governance studies
- Environmental protection
- Water and wastewater planning and design
- Municipal and medical solid waste management
- Special handling and disposal of hazardous waste, including healthcare and industrial hazardous waste
- Waste minimization, pollution prevention and disposal alternatives
- Air pollution monitoring, control and environmental consequences

## STAFF RESOURCES

WESI's chief asset is its research team of some thirty highly qualified staff, drawn from a range of disciplines including engineering, agriculture, economics, mathematics, environmental sciences and computing. This breadth emphasizes both the requirements of environmental change impact modeling and laboratory expertise in all aspects of the development and application of advanced modeling systems. Line management is achieved through program area leaders who, with the director have amassed considerable experience in undertaking interdisciplinary projects, international collaborative research, technology transfer projects, and major international contracts. The director and program area leaders are all full-time academic staff at An-Najah National University.

## COMPUTING RESOURCES

WESI operates its own cluster of high performance PCs and supports the full range of its computing activities. Full advantage is being taken of networking through national and international links. WESI maintains its own home page on the World Wide Web through the university website (<https://wesi.najah.edu/>). In addition WESI has its Facebook official page ([facebook.com/wesinajah/](https://facebook.com/wesinajah/))

## LABORATORY RESOURCES

Currently, WESI houses two main laboratories: water chemistry and water microbiology in addition to air quality monitoring unit. These laboratories are well equipped to perform needed tests on water, wastewater, soil, plant, air and some environmental issues related samples. Every laboratory has integrated set of instruments and facilities which include for example:

- ICP-MS Elan 9000, which is being used for performing elemental analysis tests for water, wastewater, food, soil and metal alloys samples.
- WolfSEnse 2010 Multi Gas Detection system, Air Particle Counter, and Methane Detection Kit which are being used for air quality monitoring and detecting the level of air pollution.
- UV spectrometer, Flame Photometer, and Multi-parameter Photometer which are being used for determination of chemical and physical characteristics of water and wastewater samples.

## INTERNATIONAL AFFILIATION

Since its establishment, there have been many cooperation agreements, programs, and projects with international institutions and agencies:

- Utah State University (USU), Logan, Utah, USA
- Federal Ministry of Education and Research (BMBF), Germany – GLOWA project
- University of Jordan, Amman, Jordan
- MEDRC (Oman)
- National Water Research Center, Cairo, Egypt
- DFG, Germany
- Achen University, Germany
- Freiburg University, Germany
- Karlsruhe Institute of Technology (KIT), Germany
- Max Planck Institute, Germany
- MENA NWC
- Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ), Germany
- UNDP/PAPP
- Near East Foundation (NEF)
- The World Bank
- Save the Children Federation (SCF)
- Development Alternative International and USAID
- National Technical University of Athens, Greece
- Newcastle University, UK
- CARE International
- Acción Contra el Hambre (ACH)- Spain
- PADUCO (The Palestinian Dutch Academic Cooperation Program on Water)
- Maastricht School of Management
- Technical University of Delft, The Netherlands
- UNESCO- IHE, The Netherlands
- University of Twente, The Netherlands
- Wageningen University, The Netherlands



An-Najah National University

# Scientific Centers An-Najah National University



# WATER AND ENVIRONMENTAL STUDIES INSTITUTE



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