



Program Matrix

Faculty		Engineering								
Program		Environmental Engineering								
Award		Master's in Environmental Engineering								
Credit Hours		36								
Academic Year		2026/2027								
Year	Semester 1					Semester 2				
	Course Code	Course Name	Pre-requisite	Core/Elective	Credit Hours	Course Code	Course Name	Pre-requisite	Core/Elective	Credit Hours
1	ENVE6001	Geo-environmental Engineering	None	Core	3	ENVE6003	Solid Waste Technology and Management	None	Core	3
	ENVE6002	Air Pollution Control Design	None	Core	3	ENVE6004	Advanced Water and Wastewater Treatment	None	Core	3
	ENVE6007	Environmental Monitoring and Assessment	None	Elective	3	ENVE6011	Water Resources and Environmental Systems Analysis	None	Elective	3
	UNIR6000	Advanced communication for Engineers	None	Core	0					
2	ENVE6000	Master's Thesis	None	Core	9	ENVE6000	Master's Thesis	None	Core	9

Level 1

ENVE6001

Geo-environmental Engineering

Geoenvironmental engineering deals with the behavior of soils, rocks and groundwater when they interact with contaminants and addresses problems of hazardous and non-hazardous waste management, contaminated sites, and sustainable development. The topics include various geoenvironmental problems and the need for environmental engineering, the fundamental background needed to understand and address environmental problems, management of wastes through engineered landfills and impoundments, characterizing, assessing and remediating contaminated sites, beneficial use of waste and recycled materials, and incorporating sustainability in waste management and pollution control.

ENVE6002

Air Pollution Control Design

This course focuses on core principles and advanced specialized knowledge of air pollution, physical and chemical principles regarding formation and control of air pollutants in industrial and technological processes, air pollution modeling principles of particulate and gaseous control; design devices and systems for air pollution control and application to industrial air pollution control.

ENVE6003

Solid Waste Technology and Management

The course aims to provide a comprehensive understanding of the problems associated with solid waste and the various technologies and management strategies used to address them. It focuses on developing specific skills related to waste management planning, source separation, incineration, and landfilling. Additionally, the course emphasizes the principles and tools necessary for conducting assessment of solid waste management systems.

ENVE6004

Advanced Water and Wastewater Treatment

This course covers water quality, standards and regulations, specialized and advanced unit processes of softening, ion exchange, adsorption, solid-liquid filtration and membrane systems. The principle of operation of aerobic treatment processes is discussed in detail and methods of advanced effluent treatment for higher discharge standards and effluent re-use are described. Design of waste water treatment systems is discussed in detail.

ENVE6005

Environmental Risk Assessment

This course examines the fundamental principles governing toxic contaminant exposure and risk to humans and ecosystems. The course also covers necessary aspects of probability and statistics; physical and chemical behavior of key priority pollutants; mass transfer and exposure pathways of the contaminants; human and environmental toxicology and methodologies for risk assessment. The course will also involve several case studies of remediation technology applications with a focus on understanding how human and environment risk is managed in real life situation.

ENVE6006

Environmental Data Analysis

This course focuses on application of statistical principles to design of measurement systems and sampling programs. The course also focuses on experimental design; data analysis; description of uncertainty; hypothesis tests; model parameter estimation methods; linear and nonlinear regression methods; trend analysis; statistical analysis of censored data and statistics of extremes.

ENVE6007

Environmental Monitoring and Assessment

This course covers general procedures, methods, theories and techniques related to monitoring programs for different environments the course provides basic environment assessment procedures. The course is divided into two parts. The first part deals with basic environment monitoring methodology and techniques, which are how to obtain and analyze information on the existence and concentration of substances in the environment, either naturally occurring or from anthropogenic sources. The course also examines natural hazard monitoring. The second part of the course introduces the concept and nature of environmental assessment (EA or EIA), an exploration of best practice in EA and a description of EA procedures.

ENVE6008 Environmental Remediation of Contaminated Sites This course develops students' understanding of integrated approaches to remediating contaminated sites; ability to select and design appropriate technologies for remediation by applying fundamental knowledge of biological, chemical and physical processes. The course also improves students' skills in communication, teamwork and analysis.
ENVE6009 Environmental Effects on Concrete The course focuses on macro and micro environmental factors affecting concrete strength and durability; local durability problems; performance of concrete under wet-dry and thermal cycles; cracking phenomena; mechanics of deterioration due to salt-weathering, sulphate attack, carbonation and reinforcement corrosion and modelling of transport phenomena.
ENVE6010 Environmental Impacts of Transportation Facilities The course focuses on the effects of environmental impacts on transportation planning and design decisions; legislation; measurement and prediction of air, noise and water pollution; vibrations; visual intrusion; assessment of environment costs and benefits; assessment of social and economic impacts; environmental impact statements.
ENVE6011 Water Resources and Environmental Systems Analysis The course covers applications of system engineering techniques to water and environmental problems; optimization techniques; linear programming; integer programming; goal programming; nonlinear programming; dynamic programming; multi-objective decision analysis and simulation methods.
ENVE6012 Environment Management Systems This course introduces in details the related aspects to Environmental Management Systems (EMS). The course discusses the ISO 14000 standard and its implementation. Students will learn how to use ISO 14000 standard as the framework for environmental improvement, sustainability programs, carbon-reduction strategies, environmental compliance and operational efficiencies in order to provide private- and public-sector organizations with a systematic approach to environmental improvement. The course will cover the following areas: the history of EMS, the elements of an EMS; systems audit and review and gap analysis; legal requirements, due diligence document control, liability; regulation and accreditation; community consultation; emerging issues in environmental management.
ENVE6013 Microbiology in Environmental Engineering This course covers important aspects of environmental microbiology and its applications to environmental systems. The main topics comprised the role of microorganisms in wastewater treatment, aerobic and anaerobic digestion of municipal sludges, and degradation of water quality in drinking water systems; disinfection of wastewater and drinking water for removal of viruses, bacteria and protozoa that cause waterborne diseases. The course also covers microbiological safety of biosolids, national and international regulations regarding use of biosolids and options for recycling to agricultural and other uses.
UNIR6000 Advanced communication This course focuses on training the students on writing and giving oral presentation to different type of audiences they will communicate in their profession.
ENVE6000 Master's Thesis This Master's thesis focuses on addressing an environmental engineering challenge to address the specific problem or research gap. The study employs a systematic methodology or approach to evaluate key variables or focus areas and proposes potential solutions, models, or insights. The findings of this research are expected to contribute to [impact, such as sustainable development, pollution mitigation, resource optimization, or policy improvement and provide a foundation for future advancements.