LEFKE AVRUPA ÜNİVERSİTESİ
EUROPEAN UNIVERSITY OF LEFKE

DEPARTMENT OF ELECTRONICS & ENVIRONMENTAL ENGINEERING

PROGRAM INFORMATION

www.eul.edu.tr

PROGRAM INFORMATION

Program Name and Degree Awarded: Environmental Engineering -B.S

Duration of Studies: 4 year -8 semester

Total Credits / ECTS : 144/240

Language of Instruction: English

Mission and Vision

Our mission is to deliver high-quality education and cultivate environmental engineers who are innovative, research-driven, and capable of translating theory into practice. We aim to empower graduates to address global environmental challenges—such as climate change, sustainable development, and pollution control—through leadership in both public and industrial sectors.

Our vision is to be a leading center of excellence in environmental engineering education and research, fostering sustainable solutions for a cleaner, healthier planet. We envision a future where our graduates drive transformative change in environmental technologies and policies worldwide.

Program Objectives

1- Graduates will be equipped with skills to effectively address emerging environmental challenges.
2- Graduates will be able to undertake roles in research and development programs
3- Graduates will be competitive candidates in environmental engineering field capable of holding positions of employment in local and international level.
4- Graduates will be prepared for leadership roles both in public and private organizations

Program Learning Outcomes

The students of the B.S. program of Department of Environmental Engineering. at the time of graduation are expected to meet the following student outcomes:

1- Ability to use theoretical and applied knowledge in; mathematics, science and engineering in the solution of complex engineering problems.
2- Ability to solve environmental engineering problems by applying proper analysis and modelling methods
3- Ability to design environmental engineering systems or process under realistic constraints and conditions to meet desired needs by applying modern design methods.
4- Ability to select and use modern techniques and tools needed for analysing and solving complex problems encountered in environmental engineering practices.

5- Ability to design and conduct experiments, gather data, analyse and interpret results for investigating complex environmental engineering problems or discipline specific research questions
6- Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually
7- Ability to communicate effectively, both orally and in writing; ability to write effective reports and comprehend written reports, prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions.
8- Awareness of the need for lifelong learning; ability to engage in life-long learning
9- An understanding of professional and ethical responsibility
10- Knowledge about business life practices such as project management, risk management, and change management; awareness in entrepreneurship, innovation; knowledge about sustainable development.
11- Knowledge about the global and social effects of environmental engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering; awareness of the legal consequences of engineering solutions.

Curriculum

1st Year Fall	Credit	ECTS
COM111 CHEMISTRY	3	4
COMP117 COMPUTING FOUNDATIONS	4	6
ENG111 CHEMISTRY LAB	1	2
ENG121 PHYSICS I LAB	1	2
ENG131 PHYSICS I	3	4
ENV119 INTRODUCTION TO PROFESSION	0	2
FLEXX1 FOREIGN LANGUAGE I	3	3
MATH101 CALCULUS I	4	7
	19	30

1st Year Spring	Credit	ECTS
CE112 ENGINEERING DRAWING	4	6
COM108 HISTORY	2	2
COM122 PHYSICS II	3	5
ENG122 PHYSICS II LAB	1	2
ENV102 ENVIRONMENTAL CHEMISTRY	3	5
FLEXX2 FOREIGN LANGUAGE II	3	3
MATH110 CALCULUS II	4	7
	20	30

2nd Year Fall	Credit	ECTS
CE307 FLUID MECHANICS	4	5
COM112 ECONOMICS	3	6
ENV201 ECOLOGY	3	8
ENV203 ENVIROMENTAL CHEMISTRY II	3	8
MATH201 ORDINARY DIFFERENTIAL EQUATIONS	4	5
	17	32

2nd Year Spring	Credit	ECTS
COM106 TURKISH	2	2
ENV202 ENGINEERING HYDRAULICS	4	5
ENV204 ENVIROMENTAL ENGINEERING PROCESS CHEMISTRY	3	9
ENV206 ENVIROMENTAL ENGINEERING HYDROLOGY	3	9
MATH224 ENGINEERING MATHS	3	5
MATH226 PROBABILITY & STATISTIC METHODS	3	5
	18	35
3rd Year Fall	Credit	ECTS
ENV300 SUMMER TRAINING I	0	4
ENV301 ENVIRONMENTAL ENGINEERING UNIT OPERATIONS	4	5
ENV303 ENVIRONMENTAL ENGINEERING MICROBIOLOGY	3	4
ENV305 WATER SUPPLY ENGINEERING	4	5
ENV307 AIR POLLUTION ENGINEERING	3	4
LEUXX2 FREE ELECTIVE II (CFE201 LEADERSHIP AND MANAGEMENT)	3	4
XXX1 ELECTIVE I	3	6
	20	32
3rd Year Spring	Credit	ECTS
ENV302 ENVIRONMENTAL ENGINEERING UNIT PROCESSES	4	5
ENV304 WASTEWATER ENGINEERING	4	5
ENV306 SOLID WASTE ENGINEERING	3	4
ENV308 AIR POLLUTION CONTROL PROCESSES	3	4
LEUXX1 FREE ELECTIVE I (CFE202 ENVIRONMENT AND SUSTAINABLE DEVELOPMENT)	3	4
XXX2 ELECTIVE II	3	6
	20	28
4th Year Fall	Credit	ECTS
ENV400 SUMMER TRAINING II	0	4
ENV401 PHYSICAL AND CHEMICAL PROCESSES	3	4
ENV403 WATER ENGINEERING DESIGN	4	6
ENV405 GRADUATION PROJECT I	3	6
ENV407 HAZARDOUS AND SPECIAL WASTE MANAGEMENT	3	4
PTRXX1 ELECTIVE I(CTE401 OCCUPATIONAL SAFETY AND HEALTH)	3	5
	16	29
4th Year Spring	Credit	Ects
ENV402 INDUSTRIAL POLLUTION CONTROL	3	4
ENV404 WASTE WATER ENGINEERING DESIGN	4	5
ENV406 GRADUATION PROJECT II	3	10
ENV408 OCCUPATIONAL SAFETY AND HEALTH II	3	5
	13	24

Laboratory and Equipment Capacity (if applicable)

- Chemistry Laboratory
- Environmental Chemistry Laboratory
- Computer Laboratory
- Microbiology Laboratory
- Unit operations Laboratory

Career Opportunities

Graduates in environmental engineering have a wide range of career opportunities available to them. They may work in roles such as environmental consultant, water resources engineer, air quality specialist, or waste management engineer. Employment can be found in private industry, government agencies, research institutions, and non-profit organizations, contributing to sustainable development and the protection of natural resources.

Contact Information

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Head of Department

Assist. Prof. Dr. Saltuk Pirgalıoğlu

COURSE CATALOGUE DESCRIPTIONS

ENV102 Environmental Chemistry I:. Water and wastewater characteristics; pH, Turbidity, Water quality, water and wastewater quality parameters, alkalinity, acidity, chlorine, fluoride, acid and bases, hardness, role of chemistry in environmental engineering.

ENV203 Environmental Chemistry II: Environmental chemistry in Engineering applications, Wastewater, wastewater characteristic, dissolved oxygen, BOD, COD, Nitrogen, Phosphorus, Sulfate, soil chemistry.

ENV201 Solid Waste Management: Waste generation and management, integrated waste management strategies, solid waste characteristics, collection of solid waste, recycling, computer and other electronic solid waste, composting, incineration, landfilling

ENV202 Renewable Energy Resources: Definition of energy and sustainable energy, estimation and evaluation of energy resources, environmental effects of energy, geothermal energy, hydropower, solar energy, ocean wave, tide, current, and thermal energy conversion, wind energy

ENV204 Environmental Engineering Process Chemistry: Calculations related with environmental chemistry; concentration units, hardness calculations, acidity/alkalinity, chemical equilibrium, principles of energy and material balance and application of material balance on environmental engineering unit operations, basic thermodynamic concepts and design equations of ideal reactors (batch, continuously stirred reactor and plug flow reactor are covered during the lecture

ENV206 Hydrology: Hydrological cycle, precipitation, evaporation, storage and runoff of water, streamflow, groundwater flow, well hydraulics, water pollution, water resource management

ENV301 Environmental Engineering Unit Operations: basic theory and design calculations of unit operations in environmental engineering; Aeration, coagulation, mxing equipment in coagulation, flocculation, mixing types in flocculation, sedimentation, types of sedimentation, design of rectangular sedimentation basins and rapid sedimentation, granular filtration, filter media characteristics, granular hydraulics, backwash hydraulics, design of filtration box and washtroughs

ENV303 Environmental Engineering Microbiology: This course explores the dynamic roles of microorganisms in natural and engineered environments, emphasizing their ecological functions, metabolic diversity, and applications in environmental sustainability. Students will gain a comprehensive understanding of microbial life, from basic physiology and growth to advanced topics such as bioremediation, wastewater treatment, and nutrient cycling. Through lectures, lab work, and case studies, learners will develop the analytical skills necessary to assess microbial processes and their implications for environmental health and policy.

ENV305 Water Supply Engineering: Water Supply Engineering provides a comprehensive overview of the planning, design, operation, and maintenance of water supply systems. The course emphasizes sustainable resource management, hydraulic design principles, and public health considerations for collection and distribution of potable water.

ENV302 Environmental Engineering Unit Processes: basic theory and kinetics of reactors that are used in wastewater treatment facilities; reactor types and design equations, biological wastewater treatment and role of microorganisms in wastewater treatment, microbial growth kinetics, net biomass yield, observed yield, modelling of suspended growth treatment, denitrification, enhanced phosphorus removal, types of attached growth reactors and reactor configurations for nutrient removal.

ENV304 Wastewater Engineering: This course provides a comprehensive understanding of sources of wastewater, sewer hydraulics, collection of wastewater, sanitary sewer design, storm sewer design, sewer appurtenances, pumping of wastewater, design principles of wastewater treatment plants. Course gives introductory information on the principles and techniques of wastewater treatment and disposal.

ENV306 Solid Waste Engineering: The purpose of this course is to discuss the principles of solid waste management and engineering principles related to the separation, processing, transformation, and final disposal of solid waste. Treatment techniques include; thermal and biological conversion and sanitary landfills.

ENV308 Air Pollution Control Processes: The main objectives of the course are to provide information on the different types of air pollutants and their effects on materials, humans, animals, vegetation, etc., Identify sources (stationary and mobile) of air pollution,Explain the effects of meteorology on air pollution, Introduce mathematical/ statistical models of atmospheric dispersion (horizontal, vertical, etc) of air pollutants, Suggests control methods for different types of air pollutants (e.g. gasses, vapors, sulfur oxides, nitrogen oxides, etc), Introduce emissions from various mobile and stationary sources.

ENV401 Physical and Chemical Processes: basic theory and design calculations of physcial and chemical processes that are used in environmental engineering; Adsorption isotherms, batch adsorption, adsorption column design, ion exchange chemistry, ion exchange column design, Reverse Osmosis and Nanofiltration membrane properties, RO and NF Practice, Disinfection; types of disinfectants and chemical reactions, disinfectant selection, contact facilities, Lime-Soda Softening processes, Lime-Soda process configurations and design criteria

ENV403 Water Engineering Design: Designing water treatment plants; general water supply design considerations, drinking water plant process selection and integration, removal of specific constituents, water plant residuals management, plant design by integration of different unit operations and processes.

ENV407 Hazardous and Special Waste Management: The purpose of this course is to introduce identification and classification of hazardous waste, engineering principles related to minimization, prevention and treatment of hazardous wastes using physicochemical processes,

solidification & stabilization technology, biological and thermal methods. Land storage and disposal will be discussed. An overview will be given about the management of special wastes such as household hazardous waste, batteries, waste electrical & electronic equipment, used oil, end-of-life vehicles, scrap tires, construction & demolition waste.

ENV402 Industrial Pollution Control: This course provides a comprehensive study of pollution generated by industrial activities, focusing on the sources, characteristics, and control strategies for industrial waste and wastewater. Students will explore the environmental impacts of various industrial sectors, methods for waste minimization, and technologies for treatment and disposal.

ENV404 Wastewater Engineering Design: Biological wastewater treatment plant design; wastewater flow rates and loadings, wastewater treatment process selection, activated sludge process design, Introduction to attached Growth and sludge treatment

ENV408 Occupational Safety and Health II: This advanced course builds upon foundational principles of occupational safety and health, focusing on risk assessment, hazard control, and regulatory compliance in complex work environments. Students will explore industrial hygiene, ergonomics, toxicology, and emergency preparedness, with emphasis on high-risk sectors such as construction, manufacturing, and chemical processing.

Technical Electives

ENVXXX Radioactive Waste Management: This course provides a comprehensive overview of radioactive waste generation, classification, handling, and disposal. Students will explore the scientific principles behind radioactivity, the environmental and health risks associated with radioactive materials, and the engineering and regulatory frameworks that govern their safe management.

ENVXXX Renewable Energy Resources: This course explores the principles, technologies, and applications of renewable energy systems in the context of global sustainability and climate resilience. Students will examine the scientific foundations and engineering design of solar, wind, hydro, biomass, and geothermal energy systems.

ENVXXX Special Topics in Environmental Engineering: This advanced course offers an in-depth exploration of selected contemporary and emerging topics in environmental engineering. Designed to respond to evolving global challenges, the course content varies by semester and may include specialized areas such as climate adaptation technologies, advanced water treatment, environmental data analytics, circular economy strategies, or low-carbon infrastructure design.

ENVXXX Anaerobic Treatment: This course provides an in-depth exploration of anaerobic treatment processes used in the management of organic waste and wastewater. Students will examine the microbiological, biochemical, and engineering principles that govern anaerobic digestion, with emphasis on reactor design, operational parameters, and energy recovery. The course covers applications in municipal, industrial, and agricultural settings, highlighting the role of anaerobic systems in sustainable waste management and biogas production.

ENVXXX Advanced Oxidation Processes: This course provides an in-depth study of Advanced Oxidation Processes (AOPs) used in the treatment of water, wastewater, and industrial effluents. AOPs are powerful chemical treatment methods designed to degrade persistent organic pollutants through the generation of highly reactive species such as hydroxyl radicals. Students will explore the principles, kinetics, and design of various AOP systems, including ozone-based, UV-based, and Fenton-based processes. Emphasis is placed on process selection, operational optimization, and integration with conventional treatment technologies.

ENVXXX Advanced Topics on Air Pollution: This advanced course delves into the complex scientific, technical, and regulatory dimensions of air pollution. Students will explore emerging pollutants, advanced monitoring techniques, atmospheric chemistry, and modeling approaches used to assess and mitigate air quality issues. The course emphasizes interdisciplinary analysis of urban, industrial, and transboundary air pollution, with a focus on climate interactions, health impacts, and policy responses.