DEPARTMENT OF ENVIRONMENTAL ENGINEERING

The master's program of the Department of Environmental Engineering started in 1995 and the doctoral program started in 2006. To date, there have been 138 graduates from the master's program and 32 graduates from the doctoral program. The Department of Environmental Engineering has the technical and scientific competence to train environmental engineers with its physical and laboratory facilities and research facilities. Technological facilities are used during the lectures given in our department. With its strong academic staff and physical facilities, it is ambitious in its graduate programs and aims to carry out graduate studies with added value. Our department consists of 5 Professors, 1 Associate Professor and 5 Assistant Professors.

Our department has laboratories specialized in many areas of Environmental Engineering discipline. These are Environmental Chemistry Laboratory, Basic Processes and Pyrolysis Laboratory, Environmental Microbiology Laboratory, Air Pollution and Control Laboratory, GC Laboratory, Wastewater Analysis and Research Laboratory, Wastewater Treatment and Research Laboratory, Anaerobic Treatment Laboratory, Biological Treatment Research Laboratory and Ecotoxicology Laboratory. In our department laboratories there are gas and ion chromatography, photocatalytic air pollutant removal system, flue gas dust and emission measurement devices, aerobic and anaerobic reactors, pyrolysis system, ultrasound device, cyanide analyzer, microscope, bioreactor, super critical CO2 extractor, super critical water oxidation, ozone device.

The Department has a wide range of courses with a total of 45 courses in spring and fall semesters. The courses are offered on climate change, biomass energy source, biofuel production, global climate change, innovative applications for waste and wastewater management under the title of clean and circular economy, reuse of treated wastewater, fate and removal of micro-pollutants called endocrine and persistent chemicals in water and wastewater. In addition, national and international projects are carried out on these subjects. Especially in TUBITAK projects, undergraduate and graduate students can take part in the projects as scholarship student and gain expertise in specific fields with project experience. In addition, depending on the quality of the thesis studies carried out, thesis outputs can be published as national or international papers or articles in the Environmental

Engineering literature. Our staff in the department is eager to publish and puts effort in publishing.

In addition, in advisor preferences, matching is made according to the field or faculty member the student wants to study.

In our department; national (TÜBİTAK) projects, public projects, private sector supported projects, bilateral cooperation projects, BAP (Coordinatorship of Scientific Research Projects) supported research projects are intensively carried out.

The important research areas studied in our department are as below:

- Characterization of wastewater and application of current treatment technologies,
- Reusability of treated wastewater and sewage sludge,
- Drinking water analysis and quality assessment,
- Bioenergy from industrial wastewater and modeling,
- Stabilization, energy production and disposal of organic waste and sewage sludge,
- Investigation of surface and ground water quality,
- Analysis of sludges produced by different industrial activities,
- Investigation and application of appropriate removal methods for hazardous wastes and investigation of their effects on the environment,
- Investigation of environmental impacts of industrial activities, risk assessment studies,
- Detection of atmospheric pollutants,
- Development and application of mathematical or artificial intelligence models for environmental systems,
- Investigating the recovery/recycling of solid wastes and the production of new raw materials, fuels and energy from these wastes.

Some of the research project titles that have been and are being carried out in different research areas in our department are as follows:

- Development of a Treatment Model for Low BOD/TKN Content Wastewaters by Pilot Study of C, N, P and S Removal from Anaerobic Digester Filtrate,
- Determination of Kinetics and Performance of Anaerobic Treatment of Feta Cheese and Strained Yogurt Production Wastewater,
- Investigation of Training and Certificate Programs for Technical Personnel Working in Wastewater Treatment Plants and the Project of Developing a Model Specific to Our Country,
- Monitoring and Control of Microcontaminants in Wastewater Treatment Plants,

- Usability of Distillation Fractions of Pyrolytic Oils from Plastic Waste Pyrolysis as Different Fuel Types,
- Reuse of Urban Wastewater as Agricultural Irrigation Water: Removal of Antibiotics and Metabolites with Innovative Treatment Technologies and Transition from Wastewater to Soil and Plants in Agricultural Production,
- Modeling and Optimization of Treatability of Ammonia and Sulphate from Landfill Leachate by Struvite and Ettringite Precipitation through Response Surface Methodology,
- Recycling, upcycling and wastewater treatment approaches in line with the zero-waste principle for the fruit processing industry,
- Recovery of Valuable Substances from Olive Black Water and Olive Pomace by Supercritical CO2 Extraction and Investigation of Recycling Opportunities in the Food Sector,
- Recovery of Useful Products from Waste Marble Sludge, Plastics and Pirin by Upgraded Recycling,
- New recycling methods for solid product (coke) and waste/products of washing and pyrolysis processes of domestic thermoplastic solid wastes (PET, PE, PS, PP and their mixtures), new treatment approaches for washing wastewater,
- Treatability and System Kinetics of Cyanide and Metal-Cyanide (Me-CN) Complexes in Photolytic Oxidation-Alg Reactor Combination,
- Efficiency of natural zeolite and sepiolite in the removal of metal cyanide complexes,
- Use of Parabolic Trough Type Solar Collector for Dewatering of Sewage Sludge.

Students who have completed their master's degree in Environmental Engineering can work as managers or responsible engineers in various public institutions such as Municipalities, Provincial Bank, State Hydraulic Works, Ministry of Environment and Urbanization, etc., industrial facilities, private organizations producing environmental technologies and services.