



**MARMARA UNIVERSITY
FACULTY OF ENGINEERING
ENVIRONMENTAL ENGINEERING DEPARTMENT**

**ENVE 4197/4198 ENGINEERING PROJECT
PROPOSAL FORM
FALL 2024-2025**

Instructor : Gül Gülenay Hacıosmanoğlu

Project Title : Removal of emerging contaminants from wastewater by boron-based adsorbents

Proposal No. : GülenayHacıosmanoğlu-1

Number of Students : Max 3 students

Requirements (from students) : Students are required to conduct research and laboratory experiments throughout the project.

Scope of the Project :

Emerging contaminants (ECs) are trace organic pollutants that are not yet regulated but have potential environmental concerns or hazards. These compounds have gained considerable attention in wastewater treatment plants in recent years. This study aims to investigate the removal of different ECs from wastewater samples by boron-based adsorbents. In the scope of the project, boron-based adsorbents (boron nitride, colemanite and ulexite) will be used for the adsorption of common ECs (i.e., BPA, ibuprofen, PFAS). The materials will be characterized and adsorption experiments will be conducted to assess the adsorption efficiency.

Hardware/Software/Lab/Equipment Requirements :

Temperature controlled shaker (IKA KS 4000), UV-Vis spectrophotometer (Shimadzu 2450), GC-MS (Shimadzu QP2010)

Development Plan :

- Literature review
- Experimental section:
Material characterization
Determination of adsorption efficiencies
- Data analysis
- Thesis writing and poster preparation