



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

**ENVE 4197/4198 ENGINEERING PROJECT
PROPOSAL FORM
FALL 2022-2023**

Instructor : Gül Gülenay Hacıosmanoğlu

Project Title : Removal of pharmaceutically active compounds (PhACs) from wastewater by adsorption

Proposal No. : GülenayHacıosmanoğlu-1

Number of Students : 4

Requirements (from students) : Students are required to conduct research and laboratory experiments throughout the project. Each student is expected to study minimum of 6 hours in the laboratory each week.

Once a week, one student will bring the prepared samples to Göztepe laboratory for GCMS analysis.

Scope of the Project : Pharmaceutically active compounds (PhACs) have gained considerable attention in wastewater treatment plants due to their health and environmental impacts. This study aims to investigate the removal different PhACs from wastewater samples by cellulose based adsorbents. In the scope of the project, natural cellulose and surface modified cellulose-based adsorbents will be used for the adsorption of common PhACs (i.e. ibuprofen, diclofenac, carbamazepin, sulfamethoxazole and ciprofloxacin). The adsorbent materials will be characterized by SEM and FTIR analyses. Then, batch adsorption experiments will be conducted to assess the adsorption efficiency along with kinetic and isotherm studies.

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 by SEM and FTIR analyses
 - Kinetic experiments
 - Isotherm studies
- Data analysis
- Thesis writing and poster preparation