 

**MARMARA UNIVERSITY FACULTY OF ENGINEERING**

**ENVIRONMENTAL ENGINEERING DEPARTMENT**

**ENVE 4197/4198 ENGINEERING PROJECT PROPOSAL FORM**

**FALL 2025-2026**

| **Instructor :** Gül Gülenay Hacıosmanoğlu  **Project Title :** Removal of PhACs from wastewater by PNC modified biopolymers  **Proposal No. :** GülenayHacıosmanoğlu-1  **Number of Students :** Max 2 students  **Requirements (from students) :** Students are required to conduct research and laboratory experiments throughout the project. |
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| **Scope of the Project :**  Nowadays, pharmaceutically active compounds (PhACs) in wastewater streams are gaining worldwide attention. PhAC residuals can reach the environment due to improper wastewater treatment. Several studies have detected these compounds in different environmental matrices, including WWTP influents, effluents and surface waters. Due to their bioaccumulation and biomagnification potential, it is crucial to develop rapid and economic methods for effective removal of these compounds.  This study aims to investigate the removal of different PhACs from wastewater samples by PNC modified biopolymers. In the scope of the project, phosphonitrilic chloride trimer (PNC) modified biopolymers will be synthesized for the adsorption of common PhACs. 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 |