MARMARA UNIVERSITY
FACULTY OF ENGINEERING
ENVIRONMENTAL ENGINEERING DEPARTMENT

ENVE 4197/4198 ENGINEERING PROJECT
PROPOSAL FORM
FALL 2025-2026

Instructor: Elif Soyer

Project Title: Experimental Evaluation of a Predictive Coagulation Model for Maximum DOC Removal

Proposal No: 1

Number of Students: Maximum 2 students will be involved in this project. Students are expected to prepare a TÜBİTAK 2209-A project application between 22 September – 02 October.

Requirements (from students): Students will review the theoretical background of the coagulation model, conduct preliminary data collection, and design an experimental plan. Progress reports will be presented biweekly, and a final report in scientific paper format will be submitted at the end of the study.

Scope of the Project: This project focuses on investigating the applicability of a model, which estimates the maximum achievable DOC removal through coagulation-flocculation. The study will involve (i) identifying the critical water quality parameters influencing organic matter removal (DOC, UV254, pH, alkalinity, coagulant dose), (ii) conducting experiments to determine actual removal efficiencies, and (iii) comparing experimental data with model predictions. The outcome will demonstrate the model's validity under different water qualities and provide insights for practical design and operation of water treatment plants.

Hardware/Software/Lab/Equipment Requirements: Orbital shaker, heated circulating water bath, dry air supply, glassware, membrane cell, total organic carbon analyzer, and UV–Vis spectrometer.

Development Plan:

Stage 1: Literature review on coagulation model and related studies.

Stage 2: Preparation of the TÜBİTAK 2209-A project proposal (22 September – 02 October).

Stage 3: Laboratory experiments to determine DOC removal under varying conditions (coagulant dose, pH, alkalinity).

Stage 4: Model validation through comparison of experimental data and predicted maximum DOC removal.

Stage 5: Preparation of final report and presentation of results.