**MARMARA UNIVERSITY**

**FACULTY OF ENGINEERING**

**ENVIRONMENTAL ENGINEERING DEPARTMENT**

**ENVE 4197/4198 ENGINEERING PROJECT**

**PROPOSAL FORM**

**FALL 2025-2026**

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| **Instructor:** Selda Yiğit Hunce  **Project Title:** Development of Simple and Reproducible Methods for the Quantitative Analysis of Microplastics (2209 – Helin Dilan Polatbilek)  **Proposal No.:**  **Number of Students:** 1  **Requirements (from students):**   * Careful laboratory work following standard safety protocols. * Ability to prepare synthetic water samples and perform controlled experiments. * Accurate data collection, documentation, and analysis. * Writing and presenting results clearly. |
| **Scope of the Project:** This project focuses on the development of simple and reproducible laboratory-scale methods for the quantitative analysis of microplastics in synthetic water samples. The study will evaluate basic separation, filtration, visualization, counting, and gravimetric approaches, with the aim of creating low-cost and easily applicable procedures. The results are expected to provide baseline methods that can be applied in educational laboratories or extended to future environmental monitoring studies. |
| **Hardware/Software/Lab/Equipment Requirements:**   * Laboratory glassware * Filtration unit and filter papers * Synthetic microplastic particles (commercial or prepared) * Stereo microscope * Drying oven and analytical balance * Computer with spreadsheet/statistical software for data processing. |
| **Development Plan:**  **Literature Review:** Collect and summarize current methods used for microplastic quantification.  **Experimental Design:** Define sample preparation steps and establish analysis parameters.  **Method Development:** Conduct experiments using synthetic water samples spiked with microplastics, applying filtration and gravimetric analysis.  **Validation:** Assess reproducibility by repeating experiments under similar conditions.  **Data Analysis:** Compare results across trials and evaluate accuracy and consistency.  **Reporting:** Prepare a final thesis report including methodology, results, discussion, and recommendations. |