**MARMARA UNIVERSITY**

**FACULTY OF ENGINEERING**

**ENVIRONMENTAL ENGINEERING DEPARTMENT**

**ENVE 4197/4198 ENGINEERING PROJECT**

**PROPOSAL FORM**

**2021-2022**

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| **Instructor : A. Evren Tuğtaş**  **Project Title : Effect of operational conditions on heavy metal speciation in anaerobic digesters**  **Proposal No. :** AEvrenTugtas*-1*  **Number of Students :** Max 3 students  **Requirements (from students) :** Students should be able to understand basic modeling concepts and should be interested in data analysis. |
| **Scope of the Project :**  Potentially toxic heavy metals such as Cu, Cd, Hg, Pg, Zn, and Ni in anaerobic digesters will be analysed in terms of their speciation using a software. Effect of temperature, pH, organic matter type and concentration on metal speciation will be investigated. Soluble and insoluble percentages of these heavy metals will be investigated and the results will be evaluated with in the anaerobic digestion system. |
| **Hardware/Software/Lab/Equipment Requirements :**  Computer, Visual Minteq, Excel |
| **Development Plan :**  Operational parameters such as pH, volatile fatty acid concentration, and presence of organics may affect metal speciation in anaerobic digesters. Students are required to use a modeling tool to determine the fate of potentially hazardous heavy metals under different operational parameters of anaerobic digesters   * Modelling tool will be studied by the students. * Previously obtained experimental data will be assessed and modeling parameters will be selected. * The system will be modeled under different operational parameters to determine the fate of metals. * Parameters and heavy metal speciation will be correlated. |