MARMARA UNIVERSITY
FACULTY OF ENGINEERING
ENVIRONMENTAL ENGINEERING DEPARTMENT

ENVE 4197/4198 ENGINEERING PROJECT
PROPOSAL FORM
2022-2023

Instructor : A. Evren Tuğtaş

Project Title : Assessment of pH effect and pretreatment on methane production in an anaerobic digestion through modified ADM1.

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 :

Acidic, neutral and alkaline pH is known to effect the methane production in a typical mesophilic anaerobic digester. In addition, pre-treatment of waste activated sludge (WAS) is known to shorten hydrolysis time and faster volatile fatty acid (VFA) accumulation is expected. The well-known anaerobic digestion model no. 1 (ADM1) will be used to assess effect of pH and several pre-treatment methods on methane production in a batch type anaerobic digester. The data, which was previously obtained will be used to calibrate and validate the model.

Hardware/Software/Lab/Equipment Requirements :
Computer, MATLAB, Excel

Development Plan:
Batch experiments at different pH levels and WAS pre-treatment has already been conducted in the laboratory.
-   MATLAB will be studied by the students.
-   Previously obtained experimental data will be assessed and modeling parameters will be selected.
-   The model will be modified and calibrated according to the outputs of the assays
-   Model validation will be carried out.