



**MARMARA UNIVERSITY
FACULTY OF ENGINEERING
ENVIRONMENTAL ENGINEERING DEPARTMENT**

**ENVE 497/498 ENGINEERING PROJECT
PROPOSAL FORM
FALL 2016**

Instructor : Prof.Dr. Barış ÇALLI

Project Title : Anaerobic chicken manure digestion coupled with ammonia removal

Proposal No. : BarışÇallı-1

Number of Students : 2-3

Requirements (from students): Enve 302 'Environmental Engineering Unit Processes' course

Scope of the Project:

The purpose of the proposed project is to examine the continuous removal of ammonia from a chicken manure digester in order to reduce the ammonia inhibition and increase the biogas production.

The aim of the proposed project is to increase the biogas production from chicken manure by removing the free ammonia from the liquid phase of the digester by using hydrophobic membranes and/or from the gas phase by absorbing the ammonia before recycling the biogas back to the digester for ammonia stripping. By these practices, it is intended to minimize the use of dilution water and/or a second waste.

Hardware/Software/Lab/Equipment Requirements :

UV/Vis spectrophotometer, Magnetic stirrer, Incubator, Peristaltic pumps, Vacuum pumps, Portable pH meter, GC-TCD, GC-FID, TKN digestion apparatus.

Development Plan:

- 1- Design, manufacture and operate of anaerobic reactors
 - a. Control reactor
 - b. Ammonia removal system coupled reactor
- 2- Comparison of methane production efficiency of the reactors.