



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

**ENVE 4197/4198 ENGINEERING PROJECT  
PROPOSAL FORM  
FALL 2023-2024**

**Instructor : Prof. Bilge Alpaslan Kocamemi-2**

**Project Title: Long-term Process Efficiency of Complete Ammonium Oxidation (Commamox) Process**

**Proposal No. : 2**

**Number of Students : (Max 3 students) 2**

**Scope of the Project :**

Long-term nitrification efficiency will be evaluated in a lab-scale sequencing batch reactor which has been operated for 3.5 years after seeding with samples taken from various locations (e.g. rapid sand filter bed, paddy field soil, sediment, activated sludge)

The nitrification process efficiency will be followed by daily ammonium ( $\text{NH}_4^+\text{-N}$ ), nitrite ( $\text{NO}_2^- \text{- N}$ ) and nitrate ( $\text{NO}_3^- \text{- N}$ ) measurements. In addition, bacterial population will be evaluated by quantitative real-time polymerase chain reaction (qPCR) measurements.

- Plexiglass reactor (2L)
- DO, pH probes, temperature transmitter (Hach, Multi parameter)
- Peristaltic pumps (Prodoz PRS-7)
- Magnetic stirrer (Heidolph MR Hei standart)
- Air pump (Risheng RS-200)
- Timers (Timer, Ledx)
- Dual injection (cation and anion) ion chromatograph (Schimadzu SIL-10AP)

**Development Plan :**

The thesis will be managed according to the work schedule below. At the end of this thesis, it is expected to have experience in such as literature searching, time management, thesis writing, teamwork, data analysis.

**Work - Time Table**

Work	Time period (month)
Training for reactor operation	2
Daily measurements	5
Batch Kinetic experiments	5
Data analysis, thesis writing	1