**MARMARA UNIVERSITY**

**FACULTY OF ENGINEERING**

**ENVIRONMENTAL ENGINEERING DEPARTMENT**

**ENVE 4197/4198 ENGINEERING PROJECT**

**PROPOSAL FORM**

**FALL 2021-2022**

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| **Instructor : Assoc. Prof. Bilge Alpaslan Kocamemi****Project Title:** A Novel approach to the Nitrification Process: The Complete Ammonium Oxidation (COMAMMOX) **(TÜBİTAK -2209-A)****Number of Students :** 4**(Rumeysa Erdinç, Rümeysa Tümer, Kerem Özbey, Hilal Demirci)**  |
| **Scope of the Project :**This study aims to enrich Comammox Nitrospira species in lab-scale reactors which is operating under low dissolved oxygen (DO) conditions. Enrichment studies will be started in a lab-scale sequencing batch reactor by using seed culture to be taken from various environments. Two reactors will be started-up with the same seed. The blank reactor will be operated under un-limited DO conditions while the other one will be operated under limited oxygen conditions. The enrichment period will be followed by observing nitrification process performance by daily ammonium (NH4+-N), nitrite (NO2-- N) and nitrate (NO3-- N) measurements. In addition, bacterial population will be evaluated by NGS analyses.  |
| **Hardware/Software/Lab/Equipment Requirements :*** Magnetic stirrer (Heidolph MR Hei standart)
* Air pump (Risheng RS-200)
* DO, pH probes, temperature transmitter (Hach, Multi parameter)
* Dual injection (cation and anion) ion chromotograph (Schimadzu SIL-10AP)
* Peristaltic pumps (Prodoz PRS-7)
* Timers (Timer, Ledx)
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| **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 about literature searching, time management, thesis writing, teamwork and data analysis.**Work - Time Table**

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| **Work** | **Time period (month)** |
| Literature search, Training for reactors operation  | 1 |
| Enrichment of Commamox Species | 2-12 |
| Batch kinetic analyses of Commamox process | 6-12 |
| Data analysis, thesis writing | 8-12 |

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