



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

**ENVE 497/498 SENIOR DESIGN PROJECT
PROPOSAL FORM
FALL 2018**

Instructor : Prof. Dr. Barış Çallı

Project Title : Computer Simulation of Biological Nitrogen Removal from Landfill Leachate with Pre-denitrification Process

Proposal No. : *BarışÇallı2018-2*

Number of Students : 2

Requirements (from students): Enve 302 'Environmental Engineering Unit Processes' course, CSE123 'Introduction to Computing' course, At least one programming language (Visual Basic Application, C++ etc.)

Scope of the Project:

The aim of the proposed project is to develop a computer simulation of the biologically nitrogen removing oxidation ditch in İSTAÇ, Kömürcüoda Landfill Leachate Treatment Plant (LTP) considering the design parameters, current influent leachate characteristics and operation conditions. Different parameters will be monitored and the analyses will be performed in the laboratory for a period of next two semesters in the influent, effluent and intermediate units of Kömürcüoda LTP. The performance of the plant will be determined and compared to the performance data that will be estimated by using computer simulation.

Hardware/Software/Lab/Equipment Requirements:

Microsoft Excel, Visual Basic Application, Thermo-reactor, Spectrophotometer, Magnetic stirrer, Microscope, Muffle Oven, Incubator

Development Plan:

- 1- Investigation and recognizing Leachate Treatment Plant's general operational status
- 2- Examination of biological nitrogen removal unit of Treatment Plant
- 3- Analyzing the characterization of leachate wastewater
- 4- Determination of design approach(s) for computer simulation
- 5- Programming the computer simulation
- 6- Comparing the computer program and actual performance of Treatment Plant