ENVE 302
Term Project 1 (2011-2012)

In the scope of this project, each group will prepare the detailed design of the following units for the given influent characteristics.

The project report will be submitted on **01.05.2012.** Presentation hours will be announced later.

The design will include the detailed process calculations for the following units:

Conventional activated sludge system including only carbon removal

For each process unit, the following scaled Autocad drawings will be prepared:

1. Plan view
2. Cross-section
3. Longitudinal section

Each drawing will include a legend. The legend will consist of at least the followings:

-Drawing name
-Group name
-Scale of drawing

On each drawing, the dimensions will be shown in mm.

The report will include the following sections:

- Cover Page
- Content page
- Executive summary
- Brief description of process
- Detailed process calculations
- Selection of necessary equipment (e.g, WAS pumps, RAS pumps, blowers, diffusers etc.)
- Reference list (All references listed here will be referred in the report)
- Appendixes: Source code of all computer programs to be used, Drawings (should be inserted in a clear file)

Layout of the proposed plant

Summary table given on page 3

Influent Characteristics :

Average daily flowrate   **: 15 000 m^3/day**
Peak daily flowrate   : 20000 m^3/day

BOD   : 300 mg/L
COD   : 600 mg/L
TSS   : 400 mg/L
TKN   : 70 mg/L
NH$_4$-N   : 45mg/L
Org-N   : 25 mg/L
TP   : 10 mg/L
Alkalinity   : 170 mg/L as CaCO$_3$

Wastewater Temperature
Min. Temp.   : 14 ^{o}C
Max. Temp.   : 24 ^{o}C

Ambient Temperature
Min. Temp.   : 12°C
Max. Temp.   : 29°C

Altitude of the treatment plant site: 150 m

EFFLUENT PARAMETERS

BOD $\leq$ 25 mg/L
TSS $\leq$ 35 mg/L
NH$_4$-N   < 0.5 mg/L
Organic N   < 2.0 mg/L
NO$_3$-N $\leq$ 7.5 mg/L
Total N $\leq$ 10 mg/L
Total P $\leq$ 3 mg/L

The below table should be filled by each group

PARAMETERS	
Q design (m3/d)	
Design temperature (0C)	
DO conc. in the tank, mg/L	
effluent C conc. (g/m3)	
effluent N conc. (g/m3)	
Minimum required sludge age,day	
Design sludge age, day	
P x, biomass (kg/day)	
Px, VSS (kg/day)	
Px, SS (kg/day)	
MLSS, mg/L	
MLVSS, mg/L	
Total volume, m3	
number of tanks	
volume of each tank(m3)	
tank dimensions	
width (m)	
length (m)	
depth (m)	
SVI (ml/g)	
X_R (mg/L)	
R	
% solids in RAS	
RAS PUMPS	
Number	
Capacity (m3/d)	
WAS Pumps	
% solids in WAS	
Number	
Capacity (m3/d)	
Oxygen calculations	
Temperetaure, 0C	
AOTR (kg/hr)	
SOTR (kg/hr)	
number of blowers	
capacity of each blower (m3/hr)	
total blower capacity (m3/hr)	
Total number of diffusers	
Number of diffusers in each tank	