

**III Year-I Semester  
(20CE5108) Environmental Engineering Lab**

Int. Marks	Ext. Marks	Total Marks	L	T	P	C
15	35	50	-	-	3	1.5

**Pre- Requisites: Environmental Engineering Theory**

**Course Objectives:**

- Estimation some important characteristics of water and wastewater in the laboratory
- It also gives the significance of the characteristics of the water and wastewater

**List of Experiments**

1. Determination of pH and Electrical Conductivity (Salinity) of Water and Soil.
2. Determination and estimation of Total Hardness–Calcium & Magnesium.
3. Determination of Alkalinity/Acidity
4. Determination of Chlorides in water and soil
5. Determination and Estimation of total solids, organic solids and inorganic solids and settleable solids by Imhoff Cone.
6. Determination of Iron.
7. Determination of Dissolved Oxygen with D.O. Meter & Wrinklers Method and B.O.D.
8. Determination of N, P, K values in solid waste
9. Physical parameters – Temperature, Colour, Odour, Turbidity, Taste.
10. Determination of C.O.D.
11. Determination of Optimum coagulant dose.
12. Determination of Chlorine demand.
13. Presumptive Coliform test.

**NOTE:** At least 10 of the above experiments are to be conducted.

**List of Equipments**

1. pH meter
2. Turbidity meter
3. Conductivity meter
4. Hot air oven
5. Muffle furnace
6. Dissolved Oxygen meter
7. U–V visible spectrophotometer
8. COD Reflux Apparatus
9. Jar Test Apparatus
10. BOD incubator
11. Autoclave
12. Laminar flow chamber
13. Hazen's Apparatus

**Course Outcomes:**

S.No	COURSE OUTCOMES	BTL
1	Estimate some important characteristics of water and wastewater in the laboratory	L3
2	Draw some conclusions and decide whether the water is potable or not	L5
3	Decide whether the water body is polluted or not with reference to the standards	L5
4	Estimate the strength of sewage in terms of BOD and COD	L4
5	Determine the Optimum coagulant dose	L4

**Correlation of Cos with POs & PSOs:**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	-	3	1	2	3	3	2	2	2	2	-	3	2
CO2	2	2	-	3	1	2	3	3	2	2	2	2	-	3	2
CO3	2	2	-	3	1	2	3	3	2	2	2	2	-	3	2
CO4	2	2	-	3	1	2	3	3	2	2	2	2	-	3	2
CO5	2	2	-	3	1	2	3	3	2	2	2	2	-	3	2

**Text Books:**

1. Standard Methods for Analysis of Water and Waste Water – APHA
2. Chemical Analysis of Water and Soil by KVSG Murali Krishna, Reem Publications, New Delhi

**Reference Books:**

1. Relevant IS Codes.
2. Chemistry for Environmental Engineering by Sawyer and Mc. Carty