



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India

DEPARTMENT OF CIVIL ENGINEERING

III Year – II Semester	L	T	P	C
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ENVIRONMENTAL ENGINEERING LAB				

Course Learning Objectives:

The course will address the following:

- Estimation of important characteristics of water and wastewater in the laboratory
- Inference with reference to the significance of the characteristics of the water and wastewater

Course Outcomes:

Upon the successful completion of this course, the students will be able to:

- Estimate some important characteristics of water, wastewater and soil in the laboratory
- Draw some conclusion and decide whether the water is suitable for Drinking/Construction / Agriculture/ Industry.
- Estimate Chloride, EC and Salinity of Soil and suggest their suitability for Construction/Agriculture
- Estimation of the strength of the sewage in terms of BOD and COD and Decide whether the water body is polluted or not with reference to the stated parameters in the list of experiments
- Demonstration of various instruments used in testing of water and soil and study of Drinking water standards, WHO guidelines, Effluent standards and standards for Construction/ Agriculture/ Industry.

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 Chloride 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 & Winklers Method and BOD.
8. Determination of N, P, K values in solid waste
9. Physical parameters – Temperature, Color, Odor, Turbidity, Taste.
10. Determination of C.O.D.
11. Determination of Optimum coagulant dose- with and without coagulant aids
12. Determination of Chlorine residue and demand



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13. Presumptive Coliform test.

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

List of Equipments

- 1) pH meter
- 2) Turbiditymeter
- 3) Conductivitymeter
- 4) Hot air oven
- 5) Muffle furnace
- 6) Dissolved Oxygenmeter
- 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
- 14) Chloroscope

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, 2010.

Reference

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