



# RAMCO INSTITUTE OF TECHNOLOGY

Approved by AICTE, New Delhi & Affiliated to Anna University  
Accredited by NAAC & An ISO 9001:2015 Certified Institution  
NBA Accredited UG Programs: CSE, EEE, ECE and MECH

## Department of Civil Engineering

Academic Year 2021 – 2022 (Even Semester)

Degree, Semester & Branch: VI Semester B.E Civil Engineering

Course Code & Title: EN8592 Wastewater Engineering

Name of the Faculty member (s): Mrs. C. Subha

### Innovative Practice Description

- **Unit / Topic:** Unit I- Determination of Chemical Oxygen Demand
- **Course Outcome:** CO 1
- **Topic Learning Outcome:** TLO1
- **Activity Chosen:** Virtual Lab Utilization
- **Justification:**

Visual demonstration of laboratory procedures is an important pedagogy. Experiments can be conducted without any constraints on place or time, in contrast to the constraints of real labs. Virtual labs in addition provide safety. Results of various concentrations of incoming sewage can be observed in the case of virtual labs easily. In Chemical Oxygen demand determination, the experiment takes more time to produce the results because of two hours of digestion and subsequent cooling of the samples. This can be avoided in the case of virtual labs.

- **Time Allotted for the Activity:** 20 Minutes
- **Details of the Implementation:**

Students were asked to carry out COD determination for a blank sample and a polluted sample. A blank sample is usually created by adding all reagents to a volume of distilled water. To ensure a true measurement of organic matter, COD is measured in both polluted water and blank samples, and the oxygen demand in the blank sample is subtracted from the COD in the original sample. A quiz has been given in the COD determination procedure to assess the understanding about the usage of chemicals in the experiment.

### CO – PO / PSO mapping:

CO	PO1	PO7	PSO4
CO1	3	1	1

(1 – Low      2 – Moderate      3 – High)



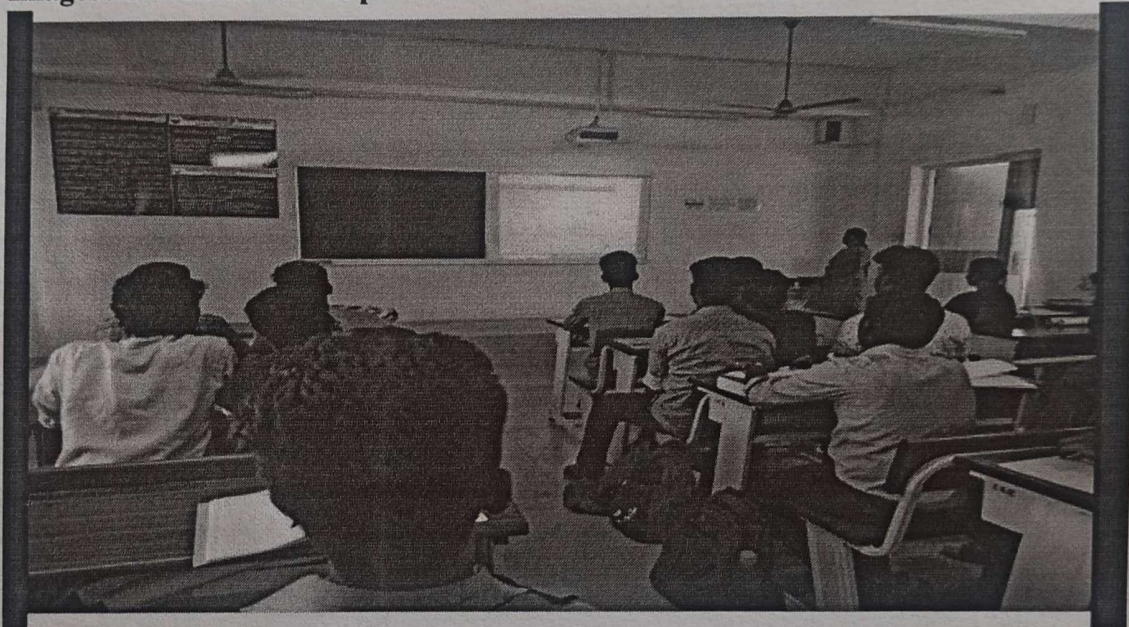
# RAMCO INSTITUTE OF TECHNOLOGY

Approved by AICTE, New Delhi & Affiliated to Anna University  
Accredited by NAAC & An ISO 9001:2015 Certified Institution  
NBA Accredited UG Programs: CSE, EEE, ECE and MECH

• PO / PSO mapped:

Innovative practice	PO1	PO7	PSO4
Justification for correlation	Apply knowledge of science in balancing equations and choosing chemicals &	Understands the impact of the pollutants on the environment based on IS standards	Selection and design of wastewater treatment units based on the COD results

• Images / Screenshot of the practice:



• Reflective Critique:

❖ *Feedback of practice from students and other stakeholders:*

Students said it will be easy for them to carry out experiments in the lab since they have an idea of the whole experiment.

❖ *The benefit of the practice:*

Experimentation was completed in a short duration of real-time.

**References:**

IS 3025 (Part 58)-2006: Method of Sampling and Test (Physical and Chemical) for Water and Wastewater: Chemical Oxygen Demand, First Rev.

*c. guhle*  
Signature of Faculty Member

*[Signature]*  
HOD