LABORATORY HANDOUT

ENVIRONMENTALENGINEERING LAB (CE-413)

CE-4TH SEMESTER

ACADEMIC YEAR (2023-24)

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Assistant Professor

Department of Civil Engineering

Department of Civil Engineering

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Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
CE-413	Environmental Engineering Lab	ESC	1	0	0	2	50	-	50

COURSE OUTCOMES

At the end of the course the student will be able to:	
CO1	Conduct various quality tests on water and wastewater
CO2	Test the suitability of water for drinking purposes
CO3	Determine the suitability of water for construction and irrigation purposes
CO4	Identify different organic compound in the water by sedimentation and water sampling.
CO5	Find total coli form in the given sample and indicate fecal contamination.

LIST OF EXPERIMENTS

S.No.	Title
1	To determine the pH value and conductivity of a given sample.
2	To find out total dissolved solid, settle able solids and suspended solids of the given sample.
3	To escalate the carbonate, bicarbonate, and hydroxide alkalinity of a sample.
4	To analyze calcium, magnesium, and total hardness.
5	To determine residual chlorine in the given sample.
6	To estimate the hardness of the given sample of water by standard EDTA method.
7	To find COD of the given waste - water sample.
8	To estimate the biological oxygen demand of the given waste - water sample.
9	To comprehend DO of the given sample.
10	Determination of percentage of available chlorine in bleaching powder, determination of residual chlorine.
11	To identify nitrates, sulphate, and fluorides in the given sample of water.
12	Determination of Solids in Sewage: i. Total solids ii. Suspended solids iii. Dissolved solids iv. Volatile solids.
13	To regulate lead content in the given sample.
14	To ascertain total coli form in the given sample.

ADDITIONAL WEB RESOURCES

1.	VLAB LINK: Environmental Engineering Lab 1 by NIT Surhatkal which gives hands-on experience to the students. https://www.vlab.co.in/participating-institute-nitk-surathkal
2.	VLAB LINK: Environmental Engineering Lab 2 by NIT Karnataka which gives hands-on experience to the students. https://ee2-nitk.vlabs.ac.in/

3.	VLAB LINK: Environmental Engineering Lab 1 by NIT Karnataka which gives hands-on experience to the students. https://www.vlab.co.in/ba-nptel-labs-civil-engineering
4.	VLAB LINK: Environmental Engineering Lab 2 by NIT Karnataka which gives hands-on experience to the students. https://ee2-nitk.vlabs.ac.in/

LAB REPORT INSTRUCTIONS

- Provide specific title of the lab experiment.
- Theory: Provide a concise abstract (typically 100-200 words) that summarizes the purpose, methods, key findings, and significance of the experiment.
- Materials/ Equipment: List all materials, components, and equipment used in the experiment. Include specifications when applicable.
- Software/Simulation Tools:
- Experimental Procedure: Describe the step-by-step procedure for conducting the experiment. Be detailed and clear in your instructions. Include diagrams or schematics to illustrate the setup, connections, and component placement. Explain any variations or adjustments made to the standard procedure.
- Observation & Calculations/Analysis: Detail the data you collected during the experiment. Include descriptions of measurements and any calculations made. Use tables, charts, or graphs to present data clearly. Discuss any trends, patterns, or significant observations. Interpret the data in the context of the experiment's objectives. Ensure that all figures, tables, and equations are correctly labeled.
- Results: Summarize the key findings of the experiment. Present results in a clear and organized manner using tables and graphs. Include units of measurement and labels for data points.
- Conclusion: Provide a concise summary of the experiment's key points and outcomes.

GRADING AND ASSESSMENT

- **Continuous Evaluation**: 30 marks
- **Final Demo & Viva**: 10 marks
- **Attendance**: 10 marks
- **Lab Overall Marks**: 50 marks

COURSE POLICIES

- **Attendance**: Minimum 75% attendance is mandatory to appear in the final examination of the course.
- **Late Submissions**: Manuals and projects must be submitted by the specified timelines.

FACULTY INFORMATION

- **Office Hours**

  Monday (12:05 PM - 12:55 PM)

  Friday (12:05 PM - 12:55 PM)

- **Contact Information**

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RUBRICS FOR LAB CONTINUOUS EVALUATION

Parameters	Performance			
	Low	**Medium**	**High**	**Marks**
Execution of the Experiment	Student was not able to setup and conduct the Experiment completely	Student was able to setup and conduct the experiment but measurement/results/observations were not correct	Students was able to set and conduct the experiment and the measurement/results/observations were not correct	10
	0-2 Marks	3-6 Marks	7-10 Marks	
Record	Student was not able to describe the detailed procedure and could not record the measurement.	Student was able to describe the detailed procedure partially or with some inaccuracy.	Student was able to describe the detailed procedure accurately and record all measurements correctly.	10
	0-2 Marks	3-6 Marks	7-10 Marks	
Viva Voice	Students could not demonstrate sufficient knowledge of foundation, functional or applied aspects related to the experiment during viva.	Students demonstrated sufficient knowledge of foundation, functional or applied aspects related to the experiment during viva.	Students demonstrate strong knowledge of foundation, functional or applied aspects related to the experiment during viva	10
	0-2 Marks	**3-6 Marks**	**7-10 Marks**	
Total Marks				**30**