



ARSD College, University of Delhi

Model Course Handout/Lesson Plan

Course Name : B.Sc. Applied Physical Science- Industrial Chemistry						
Semester	Course Code	Course Title	Lecture (L)	Tutorial (T)	Practical (P)	Credit (C)
I	CC – IC1: CORE COURSE INDUSTRIAL CHEMISTRY-1	Course Title: Industrial Chemicals & Environment UPC: 2172551103	0	0	4	2
Teacher/Instructor(s)		Mr. Vishnu Kumawat, Dr. Preeti Chaudhary				
Session		October 2022-February2023				

Course Description:

Objectives: The aim of this course is to make students aware of different industrial processes in detail. This course is basically designed to understand the chemistry of the industrial processes like Purification techniques, handling of important gases, acids, bases, pollutants, Industrial effluent and water treatment. The analytical approach of this course is to enhance the reasoning and to understand the mechanical part of the industry. The aim of this course is that the students will learn the conventional and latest techniques used in abatement of environmental pollution (air, water and industrial effluents).

Learning Outcomes:

- Know the various purification techniques used in industries like distillation, absorption, adsorption and solvent extraction.
- Understand the production, storage and handling of important gases like-oxygen, argon, helium, hydrogen and acetylene.
- Understand and develop efficacy in handling and preparation of frequently used inorganic chemicals like acids, bases, oxidizing and disinfecting chemicals.
- Learn major causes of air pollution, its control and alarming problem of global warming.
- Know qualitative and quantitative measurements of water treatment, conservation and handling of industrial effluent.

List of Experiments:

Chemistry Lab-Basic analytical chemistry

1. Determination of dissolved oxygen in water.
2. Determination of Chemical Oxygen Demand (COD)
3. Determination of Biological Oxygen Demand (BOD)
4. Percentage of available chlorine in bleaching powder.
5. Measurement of chloride, sulphate and salinity of water samples by simple titration method. (AgNO_3 and potassium chromate)

6. Estimation of total alkalinity of water samples (CO_3^{2-} , HCO_3^-) using double titration method.
7. Isolation of compound using solvent extraction method.
8. A survey-based study on common bio-indicators of pollution and SPM in air samples.
9. Preparation of borax and boric acid.

Details of the Lab Course		
Session	Name of Experiment	Contact Hours
1.	Issue of apparatus.	4
2.	Practice for Volumetric titration for standardization of secondary standard solutions.	4
3.	Determination of dissolved oxygen in water DO_1	4
4.	Determination of dissolved oxygen in water. DO_2	4
5.	Determination of Biological Oxygen Demand (BOD).	4
6.	Percentage of available chlorine in bleaching powder.	4
7.	Estimation of total alkalinity of water samples (CO_3^{2-} , HCO_3^-) using double titration method.	4
8.	Percentage of available chlorine in bleaching powder-Repetition	4
9.	Measurement of chloride of water samples by simple titration method. (AgNO_3 and potassium chromate).	4
10.	Measurement of sulphate of water samples by simple titration method. (AgNO_3 and potassium chromate).	4
11.	Measurement of salinity of water samples by simple titration method. (AgNO_3 and potassium chromate).	4
12.	Isolation of compound using solvent extraction method.	4
13.	Determination of Chemical Oxygen Demand (COD).	4
14.	Mock test-1	4
15.	Viva Voce/Mock test-2	4
	Total	60

Suggested Books:

Sl. No.	Name of Authors/Books/Publishers	Year of Publication/ Reprint
1.	Khopkar, S.M. Environmental Pollution Analysis, New Age International Publisher.	2010
2.	Pani, B. Textbook of Environmental Chemistry, I. K. International Publishing House.	2017
3.	De, A. K. Environmental Chemistry, New Age International Pvt, Ltd, New Delhi.	2012

4.	Kent, J. A. (ed) Riegel's Handbook of Industrial Chemistry, CBS Publishers, New Delhi.	1997
5.	Stocchi, E. Industrial Chemistry, Vol -I, Ellis Horwood Ltd. UK.	1990

Evaluation Scheme:

No.	Component	Duration	Marks
1.	Internal Assessment		20
	• Quiz/Viva		
	• Observation & Record		
	• Attendance		
	• Model Exam		
2.	End Semester Examination	5 hrs.	60
3.	Total		80

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