



ARSD College, University of Delhi

Model Course Handout/Lesson Plan

Course Name : B.Sc. (Hons) Chemistry						
Semester	Course Code	Course Title	Lecture (L)	Tutorial (T)	Practical (P)	Credit (C)
III	CHEMISTRY – SEC-9	Basic Analytical Chemistry	0	0	4	2
Teacher/Instructor(s) Session		Dr. Snehlata, Dr. Meenakshi Gupta 2022-23				

Course Description:

The objective of this course is to make students aware about the importance and the concepts of chemical analysis of water and soil, using separation techniques like chromatography and instrumentation techniques like flame photometry and spectrophotometry.

Learning Outcomes:

By the end of this course, students will be able to:

- Handle analytical data
- Determine composition and pH of soil, which can be useful in agriculture
- Do quantitative analysis of metal ions in water
- Separate mixtures using separation techniques
- Estimate macro nutrients using Flame photometry

List of Experiments:

1. Determination of pH of soil samples.
2. Estimation of Calcium and Magnesium ions as Calcium carbonate by complexometric titration.
3. Determination of pH, acidity and alkalinity of a water sample.
4. Determination of dissolved oxygen (DO) of a water sample.
5. Paper chromatographic separation of mixture of metal ion (Ni^{2+} and Co^{2+}).
6. To study the use of phenolphthalein in trap cases.
7. To analyze arson accelerants.
8. To carry out analysis of gasoline.
9. Estimation of macro-nutrients: Potassium, calcium and magnesium in soil samples by flame photometry.

10. Spectrophotometric determination of Iron in vitamin / dietary tablets.

11. Spectrophotometric identification and determination of caffeine and benzoic acid in soft drink.

12. Determination of ion exchange capacity of anion / cation exchange resin (using batch procedure if).

Details of the Lab Course		
Session	Name of Experiment	Contact Hours
1	Issue of Apparatus	4
2	Determination of pH of soil samples.	4
3	Estimation of Calcium and Magnesium ions as Calcium carbonate by complexometric titration.	4
4	Determination of pH and acidity of a water sample	4
5	Determination of alkalinity of a water sample	4
6	.Determination of dissolved oxygen (DO) of a water sample.	4
7	Paper chromatographic separation of mixture of metal ion (Ni ²⁺ and Co ²⁺)	4
8	To study the use of phenolphthalein in trap cases.	4
9	To analyze arson accelerants.	4
10	To carry out analysis of gasoline.	4
11	Estimation of macro-nutrients: Potassium, calcium and magnesium in soil samples by flame photometry.	4
12.	Spectrophotometric determination of Iron in vitamin / dietary tablets.	
13	Spectrophotometric identification and determination of caffeine and benzoic acid in soft drink.	4
14	Determination of ion exchange capacity of anion / cation exchange resin	4
15	Mock test	4
	Total	60
Suggested Books:		
Sl. No.	Name of Authors/Books/Publishers	Year of Publication/Reprint
1.	Christian, G.D., Analytical Chemistry, John Wiley & Sons.	2004

2.	Harris, D. C. , Exploring Chemical Analysis, W.H. Freeman and Co.	2007
3.	Skoog, D.A.; Holler F.J.; Nieman, T.A. (2005), Principles of Instrumental Analysis, Thomson Asia Pvt. Ltd	2005
4.	Svehla, G., Vogel's Qualitative Inorganic Analysis, Prentice Hall.	1996
5.	Mendham, J.; Denney, R.C.; Barnes, J.D.; Thomas, M.J.K. Vogel's Quantitative Chemical Analysis, 6th Edition, Prentice Hall.	2007

Evaluation Scheme:

No.	Component	Duration	Marks
1.	Internal Assessment		25
	• Quiz/Viva		
	• Observation & Record		
	• Attendance		
	• Model Exam		
2.	End Semester Examination	4 hrs	25

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