ARSD College, University of Delhi

Model Course Handout/Lesson Plan

Course Name : B.Sc. (Prog) Chemistry						
Semester	**Course Code**	**Course Title**	**Lecture (L)**	**Tutorial (T)**	**Practical (P)**	**Credit (C)**
VI	CHEMISTRY DSE-2	Organometallics, Bioinorganic Chemistry, Polynuclear Hydrocarbons and UV, IR Spectroscopy	0	0	4	2
Teacher/Instructor(s)		Dr. Snehlata, Dr. Omprakash Yadav				
Session		2022-23				

Course Description:

The purpose of the course is to introduce students to some important 3d metals and their compounds which they are likely to come across. Students learn about organometallic compounds and bioinorganic chemistry which are currently frontier areas of chemistry providing an interface between organic chemistry, inorganic Chemistry and biology.The functional group approach to organic chemistry introduced in the previous courses is reinforced through the study of the chemistry of carboxylic acids and their derivatives, Amines and diazonium salts, active methylene compounds. The students will also be introduced to the chemistry and applications of polynuclear hydrocarbons and heterocyclic compounds. The learners are introduced to spectroscopy, an important analytical tool which allows identification of organic compounds by correlating their spectra to structure.

List of Experiments:

Section A: Inorganic Chemistry

1. Separation of mixtures of two ions by paper chromatography and measurement of Rfvalue in each case: (Fe^{3+}, Al^{3+} and Cr^{3+}) or (Ni^{2+}, Co^{2+}, Mn^{2+} and Zn^{2+})
2. Preparation of any two of the following complexes and measurement of their conductivity:
   (i) tetraamminecopper (II) sulphate (ii) potassium trioxalatoferrate (III) trihydrate.

Section B: Organic Chemistry

1. Detection of extra elements
2. Systematic qualitative analysis of organic compounds possessing monofunctional groups: amide, amines, halo-hydrocarbons and carbohydrates (Including Derivative preparation)
3. Identification of simple organic compounds containing the above functional groups by IR spectroscopy through examination of spectra (spectra to be provided).

Details of the Lab Course		
Session	**Name of Experiment**	**Contact Hours**
1	Separation of mixtures of two ions by paper chromatography and measurement of Rf value in $Fe^{3+}$and Al^{3+}.	4

2	Separation of mixtures of two ions by paper chromatography and measurement of Rf value in Ni2+, Co2+	4
3	Preparation of tetraamminecopper (II) sulphate.	4
4	Preparation of potassium trioxalatoferrate (III) trihydrate.	4
5	Detection of extra elements	4
6	Systematic qualitative analysis of organic compounds possessing amide functional groups including derivative preparation.	4
7	Systematic qualitative analysis of organic compounds possessing primary amine functional groups including derivative preparation.	4
8	Systematic qualitative analysis of organic compounds possessing secondary amine functional groups including derivative preparation.	4
9	Systematic qualitative analysis of organic compounds possessing tertiary amine functional groups including derivative preparation.	4
10	Systematic qualitative analysis of organic compounds possessing halo hydrocarbon groups including derivative preparation.	4
11	Systematic qualitative analysis of organic compounds possessing carbohydrate functional groups including derivative preparation.	4
12	Systematic qualitative analysis of organic compounds possessing unknown functional groups including derivative preparation.	4
13	Systematic qualitative analysis of organic compounds possessing unknown functional groups including derivative preparation.	4
14	Systematic qualitative analysis of organic compounds possessing unknown functional groups including derivative preparation.	4
15	Mock test	4
	Total	**60**

Suggested Books:

Sl. No.	Name of Authors/Books/Publishers	Year of Publication/Reprint
1.	Ahluwalia, V.K.; Dhingra, S.; Gulati, A.(2005),**College Practical Chemistry**, University Press (India) Ltd.	2005
2.	Ahluwalia, V.K.; Dhingra, S.(2004),**Comprehensive Practical Organic Chemistry:Qualitative Analysis**, University Press.	2004
3.	Vogel, A.I.,**Textbook of Practical Organic Chemistry**, Prentice Hall.	1972
4.	Svehla, G.,**Vogel's Qualitative Inorganic Analysis**, Prentice Hall.	1996

Evaluation Scheme:

No.	Component	Duration	Marks
1.	Internal Assessment		25
	• Quiz/Viva		
	• Observation & Record		
	• Attendance		
	• Model Exam		
2.	End Semester Examination	6 hrs	25