



ARSD College, University of Delhi

Model Course Handout/Lesson Plan

Course Name : B.Sc. (H) Chemistry Lab						
Semester	Course Code	Course Title	Lecture (L)	Tutorial (T)	Practical (P)	Credit (C)
V	32173901	IT Skills for Chemists	0	0	4	2
Teacher/Instructor(s)		Dr Sunita Bansal and Dr Nidhi Dureja				
Session		2022-23				

Course Description:

During the session students will have the understanding of

* word processor like MS word in which students will be creating documents like Letters, posters, tables, scientific reports, mathematical and chemical equations

*Spreadsheets like, MS Excel in which students are handling, manipulating and plotting the data. They will be able to create tables, doing mathematical calculations and plotting chemistry lab data. Solving numerical methods.

*Chemical drawing software in which they will be drawing all chemical Structures, chemical reactions and chemistry practical lab set ups.

List of Experiments:

Details of the Lab Course		
Session	Name of Experiment	Contact Hours
1	Introduction to word processor and creation of letters, posters and Tables	4
2.	Creation of scientific document Incorporating chemical equations and expressions from chemistry (e.g. Maxwell-Boltzmann distribution law, Bragg's law, van der Waals equation, etc.) into word processing documents.	4
3	chemical structures drawing and incorporating in word document (Chemdraw) software.	4
4.	Handling numeric data: Spreadsheet software (Excel) creating a spreadsheet	4
5	entering and formatting information in spreadsheet, basic functions and formulae, Simple calculations	4
6	Incorporating tables and graphs created in excel into word processing	4

	documents	
7	plotting graphs using a spreadsheet -Planck's distribution law, radial distribution curves for hydrogenic orbitals	4
8	Plotting of gas kinetic theory- Maxwell- Boltzmann distribution curves as function of temperature and molecular weight data	4
9	Plotting of Lab experiment Data (CST, Conductometric, potentiometric, pH, absorbance and Kinetics data)	4
10	Plotting of spectral data, pressure- volume curves of van der Waals gas (van der Waals isotherms), data from phase equilibria studies. Graphical solution of equations	4
11	Numeric modelling: Simulation of pH metric titration curves	4
12	Excel functions LINEST and Least Squares. Numerical curve fitting, linear regression (rate constants from concentration- time data, molar extinction coefficients from absorbance data)	4
13	numerical differentiation (e.g. handling data from potentiometric and pH metric titrations, pKa of weak acid), integration (e.g. entropy/enthalpy change from heat capacity data).	4
14	Statistical analysis: Gaussian distribution and Errors in measurements and their effect on data sets. Descriptive statistics using Excel. Statistical significance testing: The t test. The F test.Presentation: Presentation graphics	4
15	Mock Test	4
	sTotal	60
Suggested Books:		
Sl. No.	Name of Authors/Books/Publishers	Year of Publication/Reprint
1.	Harris,D.C.(2007),Quantitative Chemical Analysis. Freeman, Chapters 3-5..	2007
2.	5. Levie, R. de. (2001), How to use Excel in analytical chemistry and in general scientific data analysis, Cambridge Univ. Press	20001

Evaluation Scheme:

No.	Component	Duration	Marks
1.	Continuous Evaluation		25
	• Quiz/Viva		
	• Observation & Record		
	• Attendance		
	• Mock Exam		
2.	End Semester Examination	5 hours	25
3	Total		50

