Semester Lecture Plan

Name of the college: Government College of Arts, Science & Commerce, Sanquelim-Goa		
Name of Faculty: Dr. Dattaprasad D. Narulkar	**Subject:** Chemistry	
Paper code: CHC-111 (Basic Concepts in Chemistry)	**Program/Course: F.Y. B.Sc. (minor)**	**Division: -**
Academic year: 2025 - 2026	**Semester: II**	**Total Lectures: 30 (Theory)**

Course Objectives:

1. **To outline different theories of the periodic table and classification of elements and trends in the periodic table.**
2. **To explain different acid-base theories**
3. **To discuss thermodynamics aspects and solution chemistry.**
4. **To clarify basic concepts in organic chemistry like nomenclature, types of intermediates and reactions, use of organic compounds.**

Course Learning Outcome:

1. **List and recall key terms in organic chemistry, thermodynamics, and solution concentrations; classify elements and outline acid-base theories.**
2. **Explain thermodynamic concepts, solution laws, organic compound classification, IUPAC rules, aromaticity, and periodic trends.**

3. Apply thermodynamic concepts, concentration laws, acid-base principle, periodic trends, IUPAC and predict equilibrium changes.
4. Analyse and evaluate thermodynamic relationships, equilibrium factors, acid-base theories, periodic trends, and organic reaction mechanisms.

Month	Lectures From	Lectures To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/Assignment	ICT Tools	Reference books
December	1/12/2025	06/12/2025	02	**Introduction to the Periodic Table** Development of the periodic table- Dobereiner's Triads, Newland's Law of Octaves		Smart board/PPT	Ref 1-4
December	08/12/2025	13/12/2025	02	Newland's Law of Octaves, Modern periodic table		Smart board/PPT	Ref 1-4
December	15/12/2025	20/12/2025	02	Modern periodic table, (Theories and limitations of Mendeleev's periodic table and Modern periodic table).		Smart board/PPT	Ref 1-4
December	22/12/2025	23/12/2025	02	(Theories and limitations of Mendeleev's periodic table and Modern periodic table), Classification of the elements into s,p,d and f -block elements on the basis of electronic configuration (Continued)		Smart board/PPT	Ref 1-4
December	24/12/2025	01/01/2026		Christmas break			

January	05/01/2026	10/01/2026	02	Classification of the elements into s,p,d and f -block elements on the basis of electronic configuration (Continued)		Smart board/PPT	Ref 1-4
January	12/01/2026	17/01/2026	02	Trends in the periodic table (atomic and ionic size)	Assignment on periodic table	Smart board/PPT	Ref 1-4
January	19/01/2026	24/01/2026	02	**Acid- Base Theories** Arrhenius Concept, Bronsted Theory		Smart board/PPT	Ref 1-4
January	26/01/2026	31/01/2026	02	Bronsted Theory (continued), The Lux – Flood Solvent Systems		Smart board/PPT	Ref 1-4
February	02/02/2026	07/02/2026	02	Solvent System theory		Smart board/PPT	Ref 1-4
February	02/02/2026	07/02/2026	-	Lewis Concept of Acids and Bases. (Theories and limitations)	Examples of acids and bases and categorization based on various theory	Smart board/PPT	Ref 1-4
February	09/02/2026	14/02/2026	02	**Carbon, IUPAC nomenclature of organic compounds, and aromaticity:** Valency of carbon-structure of methane, Sp^3 hybridisation.		Smart board/PPT	Ref 5-6
February	16/02/2026	21/02/2026	02	Selected functional group of organic compounds with IUPAC nomenclature (alkanes, alkenes, alkynes, alcohols, ethers, carboxylic acids)		Smart board/PPT	Ref 5-6

February	23/02/2026	28/02/2026	02	Selected functional group of organic compounds with IUPAC nomenclature (esters, thiol, amine, amides, halides, nitriles, nitro compounds, aldehydes and ketones)	Select an organic Compound and explore its synthesis	Smart board/PPT	Ref 5-6
March	02/02/2026	07/02/2026	02	Concept of aromaticity, Huckel's Rule,		Smart board/PPT	Ref 5-6
March	09/03/2026	14/03/2026	02	nomenclature of benzenoids (halo, nitro, alkyl), naphthalene and anthracene compounds.		Smart board/PPT	Ref 5-6
March	16/03/2026	21/03/2026	02	Revision		Smart board/PPT	-
March	23/03/2026	28/03/2026	02	Revision			
March	30/03/2026	31/03/2026		Revision			

Reference Books:

1. J. D. Lee, *Concise Inorganic* Chemistry, 5th Edn. Wiley India. 2003.
2. P. W. Atkins, T. L. Overton, J. P. Rourke, M. T. Weller & F. A. Armstrong, *Shriver & Atkins' Inorganic Chemistry*, 5th Edn.; Oxford University Press. 2010.
3. F. A. Cottton, G. Wilkinson and P. L. Gaus, *Basic Inorganic Chemistry.* 3rd Edn. Wiley India. 2007.
4. B. R. Puri, L. R. Sharma and K. C. Kalia, *Principles of Inorganic Chemistry,* 33rd Edn, Vishal Publishing Co. 2020.
5. Morrison, R.T. & Boyd, R.N. Organic Chemistry, Pearson, 2010.
6. Jerry March, Advanced Organic Chemistry; 4rd Edition, John Wiley, 2007.

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*** Assessment Rubrics**

Component	Max Marks
ISA 1	10
ISA 2	10
ISA 3	10
Semester End Exam	80
Total	100

*Best two ISA will be considered