Lecture Plan

Name of the college: Government College of Arts, Science and Commerce, Sanquelim- Goa

Name of Faculty: Dr. Amarja Prashant Naik	**Subject: Chemistry**	
Paper code: CHC-108 Properties and Processes of Molecular Chemistry.	**Program: TY BSc**	**Division: NA**
Academic year: 2024 - 2025	**Semester: V**	**Total Lectures: 30**

Course Objectives:

- Evaluation of properties and applications of liquid crystals.
- Use of colloidal properties and macromolecules.
- Concept of electrophoresis in understanding various molecular processes.

Expected Course Outcome:

- Use of photochemical reactions towards environmental prospects.
- Implementation of electrical properties of materials in development of smart materials.
- Behavior macromolecules in designing and learning various processes.

Student Learning Outcome:

1. Able to identify the properties of colloidal solution.
2. Application of liquid crystals
3. Determination of molecular weight of macromolecules.

Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
June	28/06/2024	29/06/2024	Nil	Nil	------	------	1. Concepts in physical chemistry T. Y. B. Sc. by N. B. Laxmeshwar, S. A. Malushte A. S. Mule, V. N. Kulkarni, Chetana Prakashan. 2. Principles of Physical Chemistry by B. R. Puri, L. R. Sharma and M. S. Pathania. Vishal Publishing company 2015. 3. Engineering Chemistry by P. C. Jain and M. Jain Dhanpat Raj publishing company Ltd.
July	01/07/2024	06/07/2024	02	Introduction, properties of colloids	Exercise	Google Classroom	
				Origin of charge on colloidal particles	Exercise	Google Classroom	
	08/07/2024	13/07/2024	02	Origin of charge on colloidal particles, Electrical double layer	Exercise	Google Classroom	
				Electro kinetic phenomenon: Electrophoresis	Exercise	Google Classroom	
	15/07/2024	20/07/2024	02	Osmosis, Osmotic behaviour of cells, Osmoregulation, Electro osmosis	Exercise	Google Classroom	
				Streaming potential, Donnan membrane equilibrium.	Exercise	Google Classroom	

					Colloidal electrolytes		
		22/07/2024	31/07/2024	02	Macromolecules. Methods of determining molecular weight of macromolecules	Exercise	Google Classroom
					Sedimentation method	Exercise	Google Classroom
	August	1/08/2024	3/02/2024	02	Osmotic Pressure method	Exercise	Google Classroom
					Light Scattering method.	Exercise	Google Classroom
		5/08/2024	10/08/2024	02	Introduction to Electrophoresis	Exercise	Google Classroom
					Migration of an ion in an electric field	Exercise	Google Classroom
		12/08/2024	17/08/2024	02	Factors affecting electrophoretic mobility.	Exercise	Google Classroom
					Types of electrophoresis	Exercise	Google Classroom
		19/08/2024	24/08/2024	02	Free electrophoresis, Zone electrophoresis	Exercise	Google Classroom
					Gel electrophoresis	Exercise	Google Classroom

4. Biophysical Chemistry Principles and Techniques, Himalaya Publishing house by Upadhyay, Upadhyay and Nath.

5. Advanced Physical Chemistry by Goel Publishing house, Meerut by Gurdeep Raj.

6. Basic Principles in Physical Chemistry F. Y. B. Sc. by Sheth Publishers K. Raghuraman, D. V. Prachi, S. J. Gary, C. S. Prabhu, P. A. Sathe.

	26/08/2024	31/08/2024	02	Principles of Electrophoresis	Exercise	Google Classroom	
				Isoelectric focusing	Exercise	Google Classroom	
September	2/09/2024	7/09/2024	02	Two-dimensional gel electrophoresis	Exercise	Google Classroom	
				DNA foot printing	Exercise	Google Classroom	
	16/09/2024	21/09/2024	02	Introduction to Liquid crystal.	Exercise	Google Classroom	
				Liquid crystals, Vapour pressure-temperature diagram	Exercise	Google Classroom	
	23/09/2024	28/09/2024	02	Thermography, classification of liquid crystals: thermographic and lyotropic liquid crystals	Exercise	Google Classroom	
				Theory of liquid crystals	Exercise	Google Classroom	
	30/09/2024	30/09/2024	02	Molecular arrangement of liquid crystals	Exercise	Google Classroom	
	1/10/2024	5/10/2024	02	Chemical properties of liquid crystals	Exercise	Google Classroom	

					Pressure induced mesomorphism	Exercise	Google Classroom
	October	7/10/2024	12/10/2024	02	Applications of liquid crystals display	Exercise	Google Classroom
					Thermometers and Research.	Exercise	Google Classroom
		14/10/2024	19/10/2024	02	Importance of lyotropic liquid crystals: soap, foam	Exercise	Google Classroom
					Liquid crystals in biological systems	Exercise	Google Classroom
		21/10/2024	22/10/2024	01	Revision		

***Assessment Rubrics**

Component	Max Marks
ISA 1	10
ISA 2	10
Practical	---
Project	---
Semester End Exam	80