ODD SEMESTER PRACTICAL PLAN

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

Name of Faculty: Dr. Nisha Kevat | **Subject: Cell Biology and Plant Biochemistry (PRACTICAL)**

Paper code: BOC 106 | **Program/Course: T.Y B.Sc.** | **Division: - --**

Academic year: 2024 - 2025 | **Semester: V** | **Total Lectures: 60 (Practicals)**

Course Objectives:

- This course is designed to provide an overview of how cellular structure and function arise as a result of the properties of cellular macromolecules.
- The practical component of the study deals with experiments supporting cell structure and functioning principles as well as applications of bio-analytical techniques

Course Learning Outcome:

- Gain knowledge about the various cell organelles and their role in cell functioning. Understand the chemical structure and properties of biomolecules and their role in living organisms.
- Develop skills in various techniques used in cell biology studies.
- Be proficient in handling various instruments used in biochemistry related experiments.

Month	Practical	No. of day/s & Hours allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
July 2024	3/07	01 (4h)	**Practical 1:** Measurement of plant cell dimensions (length and breadth) using micrometry	To note down the observation,		Gupta, P.K. 1999. A Text Book of Cell and Molecular Biology. Rastogi Publications, Meerut, UP.
July 2024	10/7	01 (4h)	**Practical 2:** i. **Study of cell organelles using electron micrographs.** ii. Micro-chemical detection of reducing sugars in floral nectar using Benedict's reagent.			

July 2024	17/07	01 (4h)	**Practical 3:** i. Study of starch grains of wheat, potato and rice using I2KI reagent. ii. Localization of carbohydrates using Periodic Acid Schiff's reagent.	tables, figures in the lab note book. Take photographs of the microscopic preparation wherever applicable To plot graph wherever applicable during the practicals Complete the journal.		Jain, J.L., Jain, S. and Jain, N. 2007. Elementary Biochemistry. 3 rd edition. S. Chand and Company Ltd., New Delhi. Mathur, R. and Mehta, M. 2002. Biochemistry. 1 st edition. Anmol Publications Pvt. Ltd., New Delhi. Verma, S.K. and Verma, M. 2007. A Textbook of Plant Physiology, Biochemistry and Biotechnology. 6 th edition. S. Chand and Company Ltd., New Delhi. Sadasivam, S. and Manickam, A. 1996. Biochemical Methods. New Age International Publishers. Rao, B.R. and Deshpande, S. 2005. Experimental Biochemistry. I.K. International
July 2024	24/07	01 (4h)	**Practical 4:** i. Localization of lipids using Sudan III reagent. ii. Study of structure of DNA and RNA with the help of models			
July 2024	31/07	01 (4h)	**Practical 5:** Histochemical tests for detection of cellulose, lignin, cutin & suberin in plant section..			
August, 2024	7/08	01 (4h)	**Practical 6:** Qualitative tests for biomolecules carbohydrates, proteins and lipids			
August, 2024	14/08	01 (4h)	**Practical 7:** Extraction and estimation of total sugars using phenol sulphuric acid			
August, 2024	21/08	01 (4h)	**Practical 8:** Extraction and estimation of reducing sugars by Nelson-Somogyi method.			
August, 2024	28/08	01 (4h)	**Practical 9:** Extraction and estimation of amino acids using ninhydrin reagent.			
September, 2024	4/11	01 (4h)	**Practical 10:** Extraction and estimation of proteins by Lowry's method.			
September, 2024	18/09	01 (4h)	**Practical 11:** Extraction and estimation of ascorbic acid by titrimetric method.			
September, 2024	25/09	01 (4h)	**Practical 12:** Isolation and comparison of casein content of different milk samples using sodium acetate buffer.			
October, 2024	09/10	01 (4h)	**Practical 13:** Determination and comparison of acid value of fresh and rancid fat samples by titrimetric method. **Practical 14:** Separation of lipids by thin layer			

			chromatography			Pvt. Ltd., New Delhi.
October, 2024	16/10	01 (4h)	Practical 15: Extraction and separation of chlorophyll pigments by paper chromatography			Nigam, A. and Ayyagari. 2007. Lab Manual in Biochemistry, Immunology and Biotechnology. Tata McGraw-Hill Publishing Company Limited, New Delhi.

*****Note: Data filled in the above form is sample data.

*** Assessment Rubrics**

Component	Max Marks
ISA 1	NA
ISA 2	NA
Practical	50
Project	NA
Semester End Exam	NA