EVEN 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	
Paper code: BOT 203	**Program/Course: S.Y B.Sc.**	**Division: - --**
Academic year: 2025 - 2026	**Semester: IV**	**Total Lectures: (15 Practical x 2 Hours = 30 Hours)**

Course Objectives:

1. Provide an overview of structure of the cell and subcellular components and their functions.
2. Enhance knowledge of classification, structure and functions of biomolecules.
3. Impart skills to study properties of biomolecules and to estimate their quantities for bio-analytical research.

Course Learning Outcome:

1. On completion of this course, students will be able to:
2. Recall the types and functions of subcellular components, biomolecules, vitamins, enzymes and secondary metabolites.
3. Describe the structure of the cell, subcellular components and various biomolecules.
4. Analyze the role of subcellular components, biomolecules, vitamins, and enzymes in cell functioning.
5. 4. Develop skills in bioanalytical testing for scientific research.

Month	Lectures From:	To:	No. of lectures allotted	Topic, Subtopic to be covered	Learning outcome	ICT Tools	Reference books
December (1st Week)	01/12/2025	6/12/2025	2 H	**Practical 1.** a. Study of prokaryotic and eukaryotic cells and sub-cellular components with the help of electron micrographs. b. Study of structure of DNA	**Study of cells and DNA/RNA**: Identify the structure of prokaryotic and eukaryotic cells, sub-cellular components, and nucleic acids using electron micrographs and models/images.	Offline lecture, Demonstration	

				and RNA with the help of models/images.			
December (2nd Week)	8/12/2025	13/12/2025	2 H	Practical 2. Study of starch grains of wheat and potato using I**2**KI reagent.	**Starch grains**: Examine the structure and distribution of starch grains in wheat and potato using I2KI reagent.	Offline lecture, Demonstration	
January (3rd Week)	02/01/2026	03/01/2026	2 H	Practical 3: Localization of lipids using Sudan III reagent.	**Localization of lipids**: Detect the presence and distribution of lipids in plant samples using Sudan III reagent.	Offline lecture, Demonstration	
January (4th Week)	05/01/2026	10/01/2026	2 H	Practical 4: Histochemical tests for detection of cellulose and lignin in plant sections.	**Cellulose and lignin**: Perform histochemical tests to identify and localize cellulose and lignin in plant sections.	Offline lecture, Demonstration	
January (5th Week)	12/01/2026	17/01/2026	2 H	Practical 5: Qualitative tests for biomolecules - carbohydrates, proteins and lipids (any one test for each).	**Qualitative biomolecule tests**: Conduct qualitative tests to detect carbohydrates, proteins, and lipids in biological samples.	Offline lecture, Demonstration	
January (6th Week)	19/01/2026	24/01/2026	2 H	Practical 6 : Extraction and estimation of total sugars using phenol-sulphuric acid reagent.	**Total sugars estimation (phenol-sulphuric acid)**: Extract and estimate the total sugar content in a sample using the phenol-sulphuric acid reagent.	Offline lecture, Demonstration	
January/ (7th Week)	27/01/2026	31/01/2026	2 H	Practical 7 : Extraction and estimation of total sugars using phenol-sulphuric acid reagent.	**Total sugars estimation (phenol-sulphuric acid)**: Extract and estimate the total sugar content in a sample using the phenol-sulphuric acid reagent.	Offline lecture, Demonstration	
February (8th Week)	02/02/2026	07/02/2026	2 H	Practical 8: Extraction and estimation of reducing sugars by Nelson-Somogyi method	**Reducing sugars estimation (Nelson-Somogyi)**: Extract and estimate reducing sugars using the Nelson-Somogyi method.	Offline lecture, Demonstration	
February (9th Week)	9/02/2026	14/02/2026	2 H	Practical 9: Extraction and estimation of reducing sugars by Nelson-Somogyi method	**Reducing sugars estimation (Nelson-Somogyi)**: Extract and estimate reducing sugars using the Nelson-Somogyi method.	Offline lecture, Demonstration	

February (10^{th} Week)	16/02/2026	21/02/2026	2 H	Practical 10 : Extraction and estimation of amino acids using ninhydrin reagent.	**Amino acids estimation (ninhydrin)**: Extract and estimate amino acids in a sample using ninhydrin reagent.	Offline lecture, Demonstration	
February (11^{th} Week)	23/02/2026	28/02/2026	2 H	Practical 11: Extraction and estimation of amino acids using ninhydrin reagent.	**Amino acids estimation (ninhydrin)**: Extract and estimate amino acids in a sample using ninhydrin reagent.	Offline lecture, Demonstration	
March (12^{th} Week)	02/03/2026	07/03/2026	2 H	Practical 12: Extraction and estimation of ascorbic acid by titrimetric method.	**Ascorbic acid estimation (titrimetric)**: Extract and estimate the ascorbic acid content in a sample using a titrimetric method.	Offline lecture, Demonstration	
March (13^{th} Week)	9/03/2026	14/03/2026	2 H	Practical 13: Extraction and estimation of ascorbic acid by titrimetric method.	**Ascorbic acid estimation (titrimetric)**: Extract and estimate the ascorbic acid content in a sample using a titrimetric method.	Offline lecture, Demonstration	
March (14^{th} Week)	16/03/2026	21/03/2026	2 H	Practical 14: Determination and comparison of acid value of fresh and rancid fat samples by titrimetric method.	**Acid value of fats**: Determine and compare the acid value of fresh and rancid fat samples using a titrimetric method.	Offline lecture, Demonstration	
March (15^{th} Week)	23/03/2026	28/03/2026	2 H	Practical 15: Effect of substrate concentration on the activity of amylase enzyme.	**Amylase activity**: Analyze the effect of substrate concentration on the enzymatic activity of amylase.	Offline lecture, Demonstration	
March (16^{th} Week)	30/03/2026	31/03/2026	2 H	Practical 16: Repeating the missed or difficult practical	**practice missed/difficult practicals**: Reinforce understanding and skills by repeating missed or difficult practicals for improved comprehension and execution	Offline lecture, Demonstration	

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