

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: 2024 - 2025			Semester: IV		Total Lectures: (15 Practical x 2 Hours = 30 Hours)		
<b>Course Objectives:</b> 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.							
<b>Course Learning Outcome:</b> 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 lectu res allott ed	Topic, Subtopic to be covered	Learning outcome	ICT Tools	Reference books
December (1 <sup>st</sup> Week)	09/12/2024	14/12/2024	2 H	<b>Practical 1.</b> a. Study of prokaryotic and eukaryotic cells and sub-cellular components with the help of electron micrographs. b. Study of structure of DNA	<b>Study of cells and DNA/RNA:</b> 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 (2 <sup>nd</sup> Week)	16/12/2024	21/12/2024	2 H	Practical 2: Study of starch grains of wheat and potato using I2KI reagent.	<b>Starch grains:</b> Examine the structure and distribution of starch grains in wheat and potato using I2KI reagent.	Offline lecture, Demonstration	
January (3 <sup>rd</sup> Week)	02/01/2025	05/01/2025	2 H	Practical 3: Localization of lipids using Sudan III reagent.	<b>Localization of lipids:</b> Detect the presence and distribution of lipids in plant samples using Sudan III reagent.	Offline lecture, Demonstration	
January (4 <sup>th</sup> Week)	06/01/2025	11/01/2025	2 H	Practical 4: Histochemical tests for detection of cellulose and lignin in plant sections.	<b>Cellulose and lignin:</b> Perform histochemical tests to identify and localize cellulose and lignin in plant sections.	Offline lecture, Demonstration	
January (5 <sup>th</sup> Week)	13/01/2025	18/01/2025	2 H	Practical 5: Qualitative tests for biomolecules - carbohydrates, proteins and lipids (any one test for each).	<b>Qualitative biomolecule tests:</b> Conduct qualitative tests to detect carbohydrates, proteins, and lipids in biological samples.	Offline lecture, Demonstration	
January (6 <sup>th</sup> Week)	20/01/2025	25/01/2025	2 H	Practical 6 : Extraction and estimation of total sugars using phenol-sulphuric acid reagent.	<b>Total sugars estimation (phenol-sulphuric acid):</b> Extract and estimate the total sugar content in a sample using the phenol-sulphuric acid reagent.	Offline lecture, Demonstration	
January/ February (7 <sup>th</sup> Week)	27/01/2025	01/02/2025	2 H	Practical 7 : Extraction and estimation of total sugars using phenol-sulphuric acid reagent.	<b>Total sugars estimation (phenol-sulphuric acid):</b> Extract and estimate the total sugar content in a sample using the phenol-sulphuric acid reagent.	Offline lecture, Demonstration	
February (8 <sup>th</sup> Week)	03/02/2025	08/02/2025	2 H	Practical 8: Extraction and estimation of reducing sugars by Nelson-Somogyi method	<b>Reducing sugars estimation (Nelson-Somogyi):</b> Extract and estimate reducing sugars using the Nelson-Somogyi method.	Offline lecture, Demonstration	
February (9 <sup>th</sup> Week)	10/02/2025	15/02/2025	2 H	Practical 9: Extraction and estimation of reducing sugars by Nelson-Somogyi method	<b>Reducing sugars estimation (Nelson-Somogyi):</b> Extract and estimate reducing sugars using the Nelson-Somogyi method.	Offline lecture, Demonstration	

February (10 <sup>th</sup> Week)	17/02/2025	22/02/2025	2 H	Practical 10 : Extraction and estimation of amino acids using ninhydrin reagent.	<b>Amino acids estimation (ninhydrin):</b> Extract and estimate amino acids in a sample using ninhydrin reagent.	Offline lecture, Demonstration	
February/ March (11 <sup>th</sup> Week)	24/02/2025	01/03/2025	2 H	Practical 11: Extraction and estimation of amino acids using ninhydrin reagent.	<b>Amino acids estimation (ninhydrin):</b> Extract and estimate amino acids in a sample using ninhydrin reagent.	Offline lecture, Demonstration	
March (12 <sup>th</sup> Week)	03/03/2025	08/03/2025	2 H	Practical 12: Extraction and estimation of ascorbic acid by titrimetric method.	<b>Ascorbic acid estimation (titrimetric):</b> Extract and estimate the ascorbic acid content in a sample using a titrimetric method.	Offline lecture, Demonstration	
March (13 <sup>th</sup> Week)	10/02/2025	01/03/2025	2 H	Practical 13: Extraction and estimation of ascorbic acid by titrimetric method.	<b>Ascorbic acid estimation (titrimetric):</b> Extract and estimate the ascorbic acid content in a sample using a titrimetric method.	Offline lecture, Demonstration	
March (14 <sup>th</sup> Week)	17/02/2025	01/03/2025	2 H	Practical 14: Determination and comparison of acid value of fresh and rancid fat samples by titrimetric method.	<b>Acid value of fats:</b> Determine and compare the acid value of fresh and rancid fat samples using a titrimetric method.	Offline lecture, Demonstration	
March (15 <sup>th</sup> Week)	24/02/2025	01/03/2025	2 H	Practical 15: Effect of substrate concentration on the activity of amylase enzyme.	<b>Amylase activity:</b> Analyze the effect of substrate concentration on the enzymatic activity of amylase.	Offline lecture, Demonstration	
March (16 <sup>th</sup> Week)	31/03/2025	05/04/2025	2 H	Practical 16: Repeating the missed or difficult practical	<b>practice missed/difficult practicals:</b> Reinforce understanding and skills by repeating missed or difficult practicals for improved comprehension and execution	Offline lecture, Demonstration	
March/ April (17 <sup>th</sup> Week)	07/04/2025	12/04/2025	2 H	Practical 17: Repeating the missed or difficult practical	<b>practice missed/difficult practicals:</b> 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.