Practical Plan

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

Name of Faculty: Ms.Aishwarya Nene	**Subject: Zoology**	
Paper code: ZOO-221 (Bioinstrumentation)	**Program: S.Y.B.Sc**	**Division/Batch: 1**
Academic year: 2024-25	**Semester: IV**	**Total Practicals/Labs: 30**

Credits: 4

Course Objectives: 1. Understanding the principles, working mechanisms.
2. Applications of various Bio-instruments.
3. Familiarising the principles, operation, and applications of Imaging, separation and spectrophotometric techniques
4. Imparting hands-on experience with instruments.

Expected Course Outcome: At the end of this course, students will be able to
1. Understand the importance of instrumentation in biological research.
2. Explain the principles and applications of spectroscopic techniques and microscopy.
3. Apply a range of spectroscopic, chromatographic, electrophoretic, and microscopic techniques to analyze and characterize biomolecules, demonstrating a foundation in bioanalytical methods.
4. Critically evaluate experimental setups, troubleshoot potential issues, and adapt bioinstrumentation techniques to address specific research questions.

2. Student Learning Outcome: After the completition of this course students will be able to understand the working principles of various lab instruments and get an hands-on experience with instruments. They will also understand the significance of these instruments in various research work.

Month	Practicals/Labs Scheduled Date	No. of Practicals/Labs planned	List of Experiments	Reference books
December 2024	12/12/24	2	Demonstration of PAGE assembly and electrophoretic run for the separation of proteins.(Mithali Halarnkar)	Lab manual

January 2025	2/01/25	2	Study of pH meter assembly (Mithali Halarnkar)	Lab manual
	9/01/25	2	Calibration of pH meters.	Lab manual
	16/01/25	2	Calibration of analytical weighing balance.	Lab manual
	23/01/25	2	Beer-Lambert's Law verification using spectrophotometry / colorimetry.	Lab manual
	30/01/25	2	Study of different types of centrifuge rotors	Lab manual
February	6/02/25	2	Demonstration of separation of DNA using Agarose Gel Electrophoresis.	Lab manual
	13/02/25	2	Study of different centrifuges.	Lab manual
	20/02/25	2	Study of different microscopes- Simple, monocular, binocular compound, inverted and phase contrast.	Lab manual
	27/02/25	2	Calibration of micropipettes.	Lab manual
March	6/03/25	2	Study of absorption spectra over UV and visible range with an appropriate sample.	Lab manual
	13/03/24	2	Preparation of burette and syringe chromatographic columns (Silica/ cellulose column)	Lab manual
	20/03/25	2	Revision, Journal certification	--------
	27/03/25	2	Revision, Journal certification	-------
April	3/04/25	2	Journal certification	-------
	10/04/25	2	Journal certification	--------