

ODD SEMESTER LECTURE PLAN (AY 2026-2027)							
Name of the college: Government College of Arts, Science and Commerce, Sanquelim Goa							
Name of Faculty: Dr. Nisha Kevat				Subject: Cytogenetics and Plant Breeding (PRACTICAL)			
Paper code: BOT 301				Program/Course: T.Y B.Sc.		Division: - --	
Academic year: 2026 - 2027				Semester: V		Total Lectures: 30 (PRACTICAL)	
Course Objectives: 1. Provide knowledge about cell cycle, concepts of heredity and plant breeding. 2. Enable students to apply principles of heredity to solve genetic problems. 3. Familiarize students with understanding the causes of gene mutations and its impact on chromosome structure and number. 4. Impart knowledge and skill in methods of breeding, selection and hybridization for crop improvement.							
Course Learning Outcome: 1. Recall concepts in cytogenetics and crop improvement. 2. Understand Mendelian genetics through problem solving exercises. 3. Apply the principles of genetics in plant breeding. 4. Develop skills in plant breeding such as emasculation, pollination and induction of polyploidy.							
Month		Lectures From: To:	No. of lectures allotted	List of Experiment/s		Reference books	
June 2026		22/06/	02	Practical 1: Problems on monohybrid and dihybrid cross.		Bajracharya, D (1999). Experiments in Plant Physiology - A Laboratory Manual. Narosa Publishing House,	
June 2026		29/06/	02	Practical 2: Problems on dihybrid cross.			
July 2026		06/07/	02	Practical 3: Preparation of chromosome map using three-point test cross data.			

July 2026	13/07/	02	Practical 4: Preparation of chromosome map using three-point test cross data.	New Delhi. 2. Evert, RF (2012). Raven Biology of Plants. International Edition. 8th edition. Palgrave Macmillan, U.K. 3. Hopkins, WG and Huner, NP (2009). Introduction to Plant Physiology. 4 th edition. John Wiley & Sons, U.S.A. 4. Jain, VK (2022). Fundamentals of Plant Physiology. S. Chand and Company, Delhi. 5. Kochar, SL and Gujral, SK (2020). Plant Physiology: Theory and Applications. Cambridge University Press India Private Limited, New Delhi. 6. Pandey, SN and Sinha, BK (2006). Plant Physiology. Vikas Publication House, New Delhi. 7. Sinha, R (2015). Modern Plant
July 2026	20/07/	02	Practical 5: Study of stages in mitosis using <i>Allium cepa</i> root tips.	
August 2026	27/07/	02	Practical 6 : Study of stages in meiosis using <i>Allium cepa</i> / <i>Tradescantia</i> sp. flower buds.	
August 2026	03/08/	02	Practical 7: Preparation of karyotype from dividing <i>Allium cepa</i> root tip cells.	
August 2026	10/08/	02	Practical 8: Preparation of karyotype from dividing <i>Allium cepa</i> root tip cells	
August 2026	17/08/	02	Practical 9: Emasculation and bagging of flowers of Brassicaceae and Malvaceae, pollinating them manually, estimating fruit and seed set.	
August 2026	24/08/	02	Practical 10: Emasculation and bagging of flowers of Brassicaceae and Malvaceae, pollinating them manually, estimating fruit and seed set.	
August, 2026	31/08/	02	Practical 11: Estimation of pollen fertility in any two locally grown crop plants (chilly, brinjal or any suitable plants).	
GANESH CHATURTHI BREAK				
September, 2026	07/09/	02	Practical 12: Estimation of pollen-ovule ratio and its bearing on pollination system.	
September, 2026	14/09/	02	GANESH CHATURHTI HOLIDAYS	
September, 2026	21/09/	02	Practical 13: Demonstration of colchicine induced polyploidy.	

September, 2026	28/09/	02	Practical 14: Demonstration of colchicine induced mutation (root/shoot/germination/chromosomes).	Physiology. Narosa Publishing House, New Delhi. 8. Taiz, L, Zeiger, E, Moller, IM and Murphy, A (2015). Plant Physiology
October, 2026	05/10/	02	Practical 15: Demonstration of colchicine induced mutation (root/shoot/germination/chromosomes).	
October, 2026	12/10/	02	Practical Exam	

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

*** Assessment Rubrics**

Component	Max Marks
ISA 1	7.5
ISA 2	7.5
ISA 3 (Best 2 of 3)	7.5
Practical	25
Project	NA
Semester End Exam	60