Semester Lecture Plan (Theory)

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

Name of Faculty: Dr Jyosna Gawas | **Subject:** Botany

Paper code: BOT-202 | **Program/Course: B.Sc.** | **Division: A**

Academic Year: 2025-2026 | **Semester: IV** | **Total Lectures:** 45

Course Objectives: To provide knowledge of tissue systems, primary structure, secondary growth and wood anatomy; impart theoretical and practical understanding of the process of sexual reproduction leading to seed production in flowering plants.

Expected Course Outcome: On completion of the course, students will be able to

1. Explain the organization, development, and functions of plant tissues, secondary structures, and reproductive organs in flowering plants.
2. Analyze the structural and functional relationships among primary, secondary, and reproductive tissues contributing to plant growth and development.
3. Evaluate anatomical and reproductive adaptations in relation to physiological functions, survival, and reproduction in angiosperms.
4. Integrate knowledge of tissue organization, secondary growth, and reproductive biology to interpret the structural basis of plant form, function, and life cycle continuity.

Student Learning Outcome:

1. Explain the organization, development, and modification of plant tissues
2. Describe and analyze the reproductive structures and processes in flowering plants.

Month	Lectures		No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
	From:	To:					
December	1/12/2025	6/12/2025	2	Module 1: Tissue systems and primary structure Meristematic tissues: Characteristics and functions;		Chalk and board, powerpoint presentation	Plant anatomy and embryology by S N Pandey & A Chadha Plant anatomy by B. P. Pandey
	8/12/2025	13/12/2025	3	Classification of meristem based on position; Root and shoot apical meristems (Histogen theory and Tunica-Corpus theory).			
	1512/2025	20/12/2025	1	Concept of tissue system: Dermal tissue, ground tissue			
	22/12/2025	27/12/2025	2	Vascular tissue; types of vascular bundles;			
January	1/1/2026	3/1/2026	1	Epidermal appendages, stomatal type; secretory structures.			
	5/1/2026	10/1/2026	3	Primary structure: Anatomy of root, stem in monocots and dicots;			
	12/1/2026	17/1/2026	3	Primary structure of leaf in monocots and dicots; Nodal anatomy; root-stem transition. ISA - I			

	19/1/2026	24/1/2026	3	Module 2: Secondary growth and wood anatomy Secondary growth: activity of vascular cambium; Normal secondary growth in dicot stem			Plant anatomy and microtechniques by A. Ragland & N. Arumugum Embryology of Angiosperms by S S Bhojwani & S P Bhatnagar
	26/1/2026	31/1/2026	2	Normal secondary growth in dicot root; Anomalous secondary growth in stems of *Boerhaavia*			
February	2/2/2026	7/2/2026	3	Anomalous secondary growth in stems of *Dracaena*; Structure and functions of periderm, rhytidome and lenticels; ISA - II			
	9/2/2026	14/2/2026	3	Secondary xylem; secondary phloem;. Wood anatomy: Ring porous and diffuse porous wood; tyloses; heartwood and sapwood; tension wood;			
	16/2/2026	21/2/2026	3	Dendrochronology and other applications of plant anatomy.			
	23/2/2026	28/2/2026	3	Structure of anther (microsporangium); development of anther and formation of pollen grains (microsporogenesis); anther wall; development of male gametophyte.			
March	2/3/2026	7/3/2026	2	Structure and parts of the ovule (megasporangium); types of ovules; megasporogenesis and development of female gametophyte (embryo sac)			
	9/3/2026	14/3/2026	3	types of embryo sacs - monosporic (*Polygonum* type), bisporic (*Allium* type) and tetrasporic (*Peperomia* type); ultrastructure of mature embryo sac. ISA - III			
	16/3/2026	21/3/2026	2	Mechanism of self- and cross-pollination (types, adaptations and significance); pollen-pistil interaction; double fertilization and its significance. Structure of dicot and monocot embryo;			
	23/3/2026	28/3/2026	2	endosperm types and functions. Structure of mature seed; endospermous seed; fruit dispersal			
	30/3/2026	31/3/2026	2	Seed dispersal and its significance.			

Assessment Rubrics

Component	Max Marks
ISA 1	7.5
ISA 2	7.5
ISA 3	7.5
Practical	NA
Project	NA
Semester End Exam	60