



**M. Sc. (Botany)**  
**Semester- III**

Course Code	PS03CBOT21	Title of the Course	Plant Development and Reproduction
Total Credits of the Course	4	Hours per Week	4

Main Focus of the Course outcomes	Employability	Skill Development	Entrepreneurship
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Course Objectives:	<ol style="list-style-type: none"><li>1. To ensure the learning about the different cell types and types of tissue in plant primary and secondary body.</li><li>2. To learn about the different events in Primary and Secondary growth in woody plants.</li><li>3. To learn about the reproduction in plants and their associated changes as well as the development of microspore and megaspore, and fertilization process.</li><li>4. To learn about the events in the development of fruits and seeds in plant.</li></ol>
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Course Content		
Unit	Description	Weightage* (%)
1.	<b>Introduction to growth and development of higher plants:</b> The major groups of plants; The structure of higher plants- The cell, meristems; simple tissue; complex tissues and tissue systems – Protective systems, Absorbing systems, Supporting systems, Photosynthetic systems, Storage systems, Transporting systems; Secretory and Excretory systems, Aerating systems; Movement systems of positional perception, Intra-organismal communication systems. Concepts of plant growth and development from an organismal perspective.	25%
2.	<b>Seed to seedling:</b> Seed germination, seedling growth. Seedling to adult plant – Primary vegetative body of the plant: Growth and Differentiation of the shoot, leaf and root; Secondary body of the plant: The Vascular cambium, Secondary xylem and secondary phloem, periderm.	25%
3.	<b>Reproduction:</b> Floral evocation and development of the floral meristem, formation of floral organs, Microsporogenesis and formation of the male gametophyte, Megasporeogenesis and formation of the embryo sac, Pollen-pistil interaction and fertilization.	25%
4.	<b>Seed and Fruit formation:</b> Endosperm development and embryogenesis, Fruit growth and ripening, Dormancy of seeds and buds. Alternative Development strategies: Embryonic development of somatic cells and pollen grains, Abnormal Growth.	25%





Teaching-Learning Methodology	Regular classes, Remedial classes, Seminar presentation
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Identify different tissue systems, their formation, location and functions in plant body.
2.	Develop deep knowledge of ontogenic developmental stages from seed to a giant tree including vegetative to reproductive transitional changes in terms of structure and function.
3.	3. Gain knowledge on fruit formation, development, ripening, seed formation, dormancy of seeds and vegetative buds.

Suggested References:	
Sr. No.	References
1.	Carlquist, S. Comparative Wood Anatomy, Springer – Verlag, Berlin.
2.	Cutter, E. G. Plant Anatomy : Experiment and Interpretation : Part 2 – Organs. Edward Arnold, London.
3.	Cutter, E. G., Plant Anatomy : Part – 1 Cells and Tissues, 2 <sup>nd</sup> Edition, Edward Arnold, London.
4.	Eames, A. J. and Mac Daniels, L. H. An Introduction to Plant Anatomy, 2 <sup>nd</sup> Edition, McGraw – Hill, New York.
5.	Fahn, A., Plant Anatomy, 4 <sup>th</sup> Edition, Butterworth, Heinemann Ltd





6.	Maheswari, P. An Introduction to the Embryology of Angiosperms. McGraw-Hill Book Co., New York.
7.	Raghavan, V. Developmental Biology of Flowering Plants. Springer – Verlag, NY

On-line resources to be used if available as reference material

On-line Resources

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