

Curriculum Planner
(Department of Botany, Kalindi College)Dr.
Priyanka Verma (2024-2025)

Course: B.Sc Life Science

Semester: III

Paper: Plant Cell and Developmental Biology (Theory)

Topic	Reference	Approximate (schedule)
<p>Unit 1. Introduction to Plant Cell: structure and function 4 hours Structure of plant cell, Structure and functions of cell organelles: cell wall (primary and secondary wall), nucleus, chloroplast, mitochondria, dictyosomes, endoplasmic reticulum</p> <p>Unit 2. Polarity in plant growth 6 hours Growth through primary meristems, and secondary meristems (discuss briefly), Organisation of shoot apex (Tunica-Corpus theory, Waiting meristem theory) and root apex (Körper-Kappe theory)</p> <p>Unit 3. Differentiation of tissues: vegetative organs 7 hours Structure and functions of tissues (simple and complex), Structure of stem, root, and leaf (dicot and monocot), Brief mentioning of anomalous secondary growth in stem of <i>Salvadora/Bignonia</i> and <i>Dracaena</i>, Epidermal system: classification of stomata (Metcalf and Chalk), trichomes</p> <p>Unit 4. Differentiation of tissues: reproductive organs 6 hours Flower development (ABCDE model), Anther and its wall layers (ontogeny not to be included), microsporogenesis and microgametogenesis, pollen wall (intine, exine), male germ unit; Ovule: General structure, megasporogenesis (monosporic, bisporic, tetrasporic) and megagametogenesis (only <i>Polygonum</i> type), ultrastructure and significance of female germ unit</p>	<p>Bhojwani S.S., Bhatnagar S.P. & Dantu P.K. (2015). The Embryology of Angiosperms, 6th Edition. By VIKAS PUBLISHING HOUSE. ISBN: 978-93259-8129-4.</p> <ul style="list-style-type: none"> ● P. Maheshwari, (2004). An introduction to the embryology of Angiosperms. Tata McGraw-Hill Edition, ISBN: 0-07-099434-X. ● Johri, B.M. (1984). Embryology of Angiosperms. Netherlands: Springer-Verlag. ISBN: 13:978-3-642-69304-5 ● Raghavan, V. (2000). Developmental Biology of Flowering plants. Netherlands: Springer. ISBN: 978-1-4612-7054-6. ● Shivanna, K.R. (2003). Pollen Biology and Biotechnology. New Delhi, Delhi: Oxford and IBH Publishing Co. Pvt. Ltd. ● Mangla, Y., Khanduri, P., Gupta, C.K. 2022. Reproductive Biology of Angiosperms: Concepts and Methods. Cambridge University Press ISBN 978-1-009-16040-7. ● Tandon R, Shivanna KR, Koul M Reproductive Ecology of Flowering Plants: Patterns and Processes 1st ed. 2020 Edition ISBN 978- 	<p style="text-align: center;">August 2024- December 2024</p>

<p>Unit 5. Pollination and Fertilization 3 hours Pollination types (Self and Cross; agencies of pollination not to be included); Pollen-pistil interactions with brief overview of incompatibility, pollen tube pathway, pollen tube entry into ovule and embryo sac (porogamy, mesogamy and chalazogamy); double fertilization</p> <p>Unit 6. Development of Embryo and Seed 4 hours Endosperm structure (Free nuclear, Cellular and Helobial type, one example of each) and functions; development of embryo from zygote in monocot and dicot; establishment of apical, basal and radial organisation; development of seed (general account only)</p>	<p>9811542091.Springer Verlag • Kapoor, R., Kaur, I. Koul M.2016. Plant Reproductive Biology and Conservation IK International Publishing House Ltd. India ISBN: 9789382332909</p>	
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