

Semester	AUG 2022
Open to semester	5,7,11,13,21
Course code	BI3164/BI6154
Course title	Plant Biology - I
Credits	4 /4
Course Coordinator & participating faculty (if any)	Anjan Banerjee*, Kalika Prasad
Nature of Course	Lectures
Pre-requisites	Students are expected to have basic knowledge in cell biology/ molecular biology or biochemistry. Plant Biology-I is a pre-requisite for Applied plant Biology and would be advantageous for Ecology II as well.
Objectives (goals, type of students for whom useful, outcome etc)	The objective of this course is to understand basic plant biology, plant architecture, growth & development (signal perception & transduction etc.). How plants grow and perceive environmental signals to respond? Students having a bit of molecular biology knowledge will find the course interesting since topics are explained to that direction and understanding. This course will also help students to deal with practical questions in Applied Plant Biology and use them in agriculture biotechnology as well as environmental studies.
Course contents (details of topics /sections with no. of lectures for each)	Evolutionary plant lineages, Plant Cell, Cytoskeleton, Plasmodesmata, structure- mode of communication (3) Water transport, Mineral Nutrition, Mycorrhiza, Secondary active transport, Aquaporins (3) Photosynthesis- Light and dark reactions, molecular basis, C4 and CAM, C4 rice –prospects and argument (5), Translocation in the phloem, Macromolecular (RNA/Protein) transport and long distance signaling (4), transporter genes, Respiration, Lipid metabolism (3), Plant growth and development. Embryogenesis, polarity, Signal perception & transduction, Stress tolerance, Clock genes and signaling cascades, The control of flowering, ABC/ABCDE models, Stem cells & SAM architecture, leaf development and RAM, Molecular regulators (7) Phytochromes, photoreceptors and light control of plant development, Blue light responses (3). Plant Hormones and their critical role in plant development

	(Auxin/Cytokinin/Gibberellin/Ethylene/ ABA/Strigolactone), history, biosynthesis, mode of action/ signal transduction, Senescence and Stress physiology(8)
Evaluation /assessment	End-Sem Examination-40% Mid-Sem Examination-40% Others-Quiz, Assignments (20%)%
Suggested readings (with full list of authors, publisher, year, edn etc.)	<ol style="list-style-type: none"> 1. Buchanon, B; Gruissem, W & Jones R (2000): Biochemistry and Molecular Biology of Plants, American Society of Plant Biologists (ASPB), USA. 2. Taiz, L & Zeiger E (2010): Plant Physiology (5Th ed.) Sinauer Associates Inc., Massachusetts, USA 3. Major Plant Science journals such as Plant Cell, Plant Physiology, Frontiers in Plant Science, Trends in Plant Science, Current opinion in Plant Biology.