

**Teaching Plan Academic Session: 2025-26**  
**Department of Botany**  
**Jagannath Barooah College (Autonomous), Jorhat**

**Name of the Teacher: Dr. Liza Handique**  
**Semester: ODD & EVEN (UG and PG)**

<b>Class/Semester</b>	<b>Title &amp; Code of The Paper Allotted (Credit)</b>	<b>Method of Teaching</b>	<b>Teaching Material</b>	<b>Unit</b>	<b>Topic</b>	<b>Period/Hours Required</b>	<b>Details of the Contents</b>	<b>Remarks / Books</b>
UG, Semester I (Odd)	Phycology and Microbiology BOTMJ-011/BOTMI011 , Credits: 4	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 6	Chlorophyta and Charophyta	10	General Characteristics, occurrence, range of thallus organization, cell structure, reproduction, Morphology and life cycle of Chlamydomonas, Volvox, Oedogonium, Coleochate, Chara, Evolutionary significance of prochloron	B.R. Vashistha
UG, Semester I (Odd)	Phycology and Microbiology BOTMI011, Credits: 4	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams,	Unit 6	Chlorophyta and Charophyta	10	General Characteristics, occurrence, range of thallus organization, cell structure,	B.R. Vashistha

			You Tube videos				reproduction, Morphology and life cycle of Chlamydomonas, Volvox, Oedogonium, Coleochate, Chara, Evolutionary significance of prochloron	
UG, Semester I (Odd)	Basic of Botany, BOTMD-011, Credits:03	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 5	Basic Plant physiology	10	Photosynthesis, respiration and transpiration.	A.C. Dutta
UG, Semester I (Odd)	Basic of Botany, BOTMD-011, Credits:03	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 6	Economic botany	10	Common cereals, pulses, timbers, oil yielding crops and medicinal plants of Assam	A.C. Dutta
UG, Semester I (Odd)	Biofertilizers, BOTSEC01, Credits:03	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 3	Mycorrhiza	8	Mycorrhizal association, types of mycorrhizal association; colonization of AM- isolation and inoculum production of AM, and its influence on growth and yield of plants.	Bhattacharyya et al., 2025

UG, Semester III (Odd)	Mycology and Phytopathology , BOTMJ- 031/BOTMI031 , Credits :04	Discussion , Chalk and Board, PPT	Textbook , Referenc e books, diagrams, You Tube videos	Unit 7	Applied mycology	10	Role of fungi in biotechnology, application of food in food industry, pharmaceutical preparations; agriculture (biofertilizers); Mycotoxins; Biological control (Mycofungicides, Mycoherbicides, Mycoinsecticides, Myconematicides)	B.R. Vashistha
UG, Semester III (Odd)	Biomolecules and cell biology, BOTMJ-032, Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Referenc e books, diagrams, You Tube videos	Unit 5	Cell division	8	Phases of eukaryotic cell cycle, mitosis and meiosis; regulation of cell cycle.	Lehninger Principles of biochemistry
UG, Semester III (Odd)	Morphology and anatomy of angiosperms, BOTMJ-033, Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Referenc e books, diagrams, You Tube videos	Unit 6	Adaptive and protective systems	10	Epidermal tissue system, cuticle, epicuticular waxes, trichomes (Uni and multicellular, glandular and nonglandular, two examples of each), stomata (classification); Adcrustation and incrustation;	Singh, Pande and Jain

							anatomical adaptations of xerophytes and hydrophytes.	
UG, Semester III (Odd)	Mycology and Phytopathology , BOTMI031, Credits :04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	7	Applied mycology	10	Role of fungi in biotechnology, application of food in food industry, pharmaceutical preparations; agriculture (biofertilizers); Mycotoxins; Biological control (Mycofungicides, Mycoherbicides, Mycoinsecticides, Myconematicides)	B.R. Vashistha
UG, Semester V (Odd)	Plant systematics, BOTMJ-051, Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 6	Phylogeny of angiosperms	12	Terms and concepts (Primitive and advanced, homology and analogy, parallelism and convergence, monophyly, paraphyly, polyphyly and clades). Origin and evolution of angiosperms; coevolution of angiosperms and pollinators; methods of illustrating	Singh, Pande and Jain

							evolutionary relationships (Phylogenetic tree, cladogram)	
UG , Semester V (Odd)	Reproductive biology of angiosperms, BOT MJ-052, Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 6	Self-incompatibility	10	Basic concepts (Interspecific, intraspecific, homomorphic, heteromorphic, GSI and SSI); Methods to overcome self incompatibility; mixed pollination, bud pollination, stub pollination; intra ovarian and invitro pollination; modifications of stigma-surface, parasexual hybridization; cybrids, in vitro fertilization.	Bhojwani and Bhatnagar
UG, Semester V (Odd)	Reproductive biology of angiosperms, BOT MJ-052, Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 7	Embryo, endosperm and seed.	12	Structure and types; general pattern of development of dicot and monocot embryo and endosperm; suspensor: structure and functions; embryo-endosperm relationship; nutrition of embryo;	Bhojwani and Bhatnagar

							unusual features; embryo development in Paeonia. Seed structure, importance and dispersal mechanism. Polyembryony and apomixis.	
UG , Semester V (Odd)	Plant physiology, BOTMJ-051, Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 7	Phytochrome, cryptochrome and Phototropin	10	Discovery, chemical nature, role in photomorphogenesis , low energy responses (LER) and high irradiance responses (HIR), mode of action.	Pandey and sinha
UG, Semester V (Odd)	Plant ecology and Taxonomy, BOTMI-051; Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 3	Ecosystem	10	Structure; energy flow trophic organization; food chains and food webs, ecological pyramids production and productivity; biogeochemical cycling; cycling of carbon, nitrogen and phosphorus.	Shukla and Chandel
UG , Semester II (Even)	Archegoniatae, BOTMJ-021, Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams,	Unit 3	Pteridophytes	15	Classification upto family, morphology, anatomy and reproduction of Psilotum, Selaginella,	B.R. Vashistha

			You Tube videos				Equisetum and Pteris (Developmental details not to be included). Apogamy and apospory, heterospory and seed habit, telome theory, stelar evolution; ecological and economic importance.	
UG, Semester II (Even)	Archegoniatae, BOTMI-021, Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 3	Pteridophytes	15	Classification upto family, morphology, anatomy and reproduction of Psilotum, Selaginella, Equisetum and Pteris (Developmental details not to be included). Apogamy and apospory, heterospory and seed habit, telome theory, stelar evolution; ecological and economic importance.	B.R. Vashistha
UG , Semester IV (Even )	Plant Breeding, BOTMJ-044, Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube	Unit 4	Inbreeding depression and heterosis	10	History, genetic basis of inbreeding depression and heterosis; Applications.	A.C. Gogoi

			videos					
UG , Semester IV (Even )	Basic of genetics, BOTMJ-042 Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 6	Fine structure of gene	08	Classical v/s molecular concepts of the gene; cis trans complementation test for functional allelism; structure of phage T4, rII locus	A.C. Gogoi, Pranab Paul
UG, Semester IV (Even)	Economic botany, BOTMJ-041, Credits:m 04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 7	Sources of oils and fats	08	General description, classification, extraction, their uses and health implications groundnut, coconut, soybean, mustard (Botanical name, family and uses)	Singh, Pande and Jain
UG, Semester IV (Even)	Economic botany, BOTMJ-041, Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 10	Fibers and rubbers	05	Classification, based on the origin of fibers; cotton, coir, jute, hevea (morphology, extraction and uses)	Singh, Pande and Jain
UG , Semester IV (Even)	Molecular Biology, BOTMJ-043, Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 3	Replication of DNA	10	Chemistry of DNA synthesis (Kornberg's discovery); general principles- bidirectional, semiconservative and semi discontinuous	Sharma, Bhattacharyya and Bhattacharyya , 2024



							replication, RNA Priming; various models of DNA replication, including rolling circle, Theta mode of replication, replication of linear ds-DNA, replication of the 5' end of linear chromosome; Enzymes involved in DNA replication.	
PG, Semester I	Bryophytes, Pteridophytes and Gymnosperms, BOTC-102, Credits: 04	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube videos	Unit 3	Pteridophyta	15	Origin and evolution of Pteridophytes; Telome concept; Stelar evolution; heterospory and origin of seed habit; classification. Morphology, anatomy, reproduction and classification of pteridophytes; Economic importance of pteridophytes.	B.R. Vashsistha
PG, Semester II	Plant Physiology, biochemistry and molecular biology BOTC202,	Discussion , Chalk and Board, PPT	Textbook , Reference books, diagrams, You Tube	Unit 3	Growth and development	12	Differentiation, growth phase; physiology of flowering; photoperiodism and vernalization;	Pande and Sinha, Lehninger

	Credits: 04		videos				phytochrome concept and role in flowering; plant growth hormones; auxins, gibberellins, cytokinins, ethylene and abscisic acid and their physiological role; senescence and abscission.	
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