

Syllabus Completion Report

F. Y. B. Sc. - Botany: 2023-24

Plant life and utilization I (BO 111)

(Semester – I; Paper – I)

Sr. No.	Month	Topics
1	August	INTRODUCTION - General outline of plant kingdom (Lower Cryptogams: Thallophytes- Algae, Fungi & Lichens; Higher Cryptogams: Bryophytes and Pteridophytes; Phanerogams: Gymnosperms and Angiosperms- Dicotyledons and Monocotyledons). Distinguishing characters of these groups and mention few common examples from each. ALGAE – Introduction, General Characters, Classification (Bold and Wynne 1978) up to classes with reasons. Life Cycle of <i>Spirogyra</i> w.r.t. Habit, Habitat, Structure of thallus, structure of typical cell, Reproduction- Vegetative, Asexual and Sexual, systematic position with reasons. Revision and Assignment Class test
2	September	Utilization of Algae in Biofuel Industry, Agriculture, Pharmaceuticals, Food and Fodder LICHENS – Introduction, General Characters, Nature of Association, forms- Crustose, Foliose and Fruticose. Utilization of lichens. FUNGI – Introduction, General Characters, Classification (Ainsworth, 1973). Revision and Assignment Class test, Seminar
3	October	Life Cycle of Mushroom- <i>Agaricus bisporus</i> w.r.t. Habit, Habitat, Structure of thallus, Structure of Sporocarp Structure of Gill, Reproduction- Asexual and sexual, Systematic position. Utilization of Fungi in Industry, Agriculture, Food and Pharmaceuticals. Revision and Assignment Seminar
4	November	BRYOPHYTES – Introduction, General Characters, Classification (G.M. Smith 1955) Life Cycle of <i>Riccia</i> w.r.t. Habit, habitat, external and internal structure of thallus, Reproduction- vegetative, asexual and sexual- Structure of sex organs, fertilization, BRYOPHYTES Structure of mature sporophyte, structure of spore, systematic position with reasons. Utilization: Bryophytes as ecological indicators, agriculture, fuel, industry and medicine Revision and Assignment Theory Internal Exam
5	December	Revision and Assignment, Question paper discussion

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Syllabus Completion Report
F.Y.B.Sc. Botany CBCS Pattern
(Semester II, Paper I) 2023-24 Term II
BO-121: PLANT LIFE AND UTILIZATION II

Sr. No.	Month	Topic Covered
1	December	Credit I 1. INTRODUCTION: Introduction to plant diversity- Pteridophytes, Gymnosperms and Angiosperms with reference to vascular plants.
2	January	2. PTERIDOPHYTES: General characters, Outline classification according to Sporne (1976) up to classes with reasons. Life cycle of Nephrolepis w.r.t. Habit, habitat, distribution, morphology, anatomy of stem and leaf, Reproduction – vegetative and sexual. 3.Utilization and economic importance of Pteridophytes
3	February	Credit II 1. GYMNOSPERMS: General characters, Outline classification according to Sporne (1977) up to classes with reasons. Life cycle of Cycas w.r.t. Habit, Habitat, Distribution, Morphology and Anatomy of Stem, leaf and reproductive organs- Male cone, Microsporophyll, microspores and megasporophyll, megaspore; structure of seed; Utilization and economic importance of gymnosperms. 2. ANGIOSPERMS: General characters, Outline of classification of Bentham and Hooker’s system up to series, comparative account of monocotyledons and dicotyledons. 3. Utilization and economic importance of Angiosperms: In food, fodder, fibers, horticulture and medicines.
4	March	Theory Internal Examination Practical Internal Examination Revision & Assignment



Dr. K. M Nitaware

Syllabus Completion Report

F. Y. B. Sc. - Botany: 2023 -24

Plant Morphology and Anatomy (BO 112)

(Semester – I; Paper – II)

Sr. No	Month	Topics	Name of the teacher
1	August	<p>MORPHOLOGY Introduction, definition, descriptive and interpretative morphology. Importance in identification, nomenclature, classification, phylogeny and Plant breeding. Revision and Assignment, Tutorial</p> <p>MORPHOLOGY OF REPRODUCTIVE PARTS: Inflorescence Introduction and definition, Types: a) Racemose -Raceme, Spike, Spadix, Corymb, Umbel, Catkin and Capitulum. b) Cymose -Solitary, Monochasial- Helicoid and scorpioid; Dichasial and Polychasial. c) Special types -Verticillaster, Cyathium and Hypanthodium; Significance. Revision and Assignment, Tutorial</p> <p>Flower Introduction and definition, Parts of a typical flower: Bract, Pedicel, Thalamus- forms, Perianth- Calyx and Corolla, Androecium and Gynoecium. Symmetry: Actinomorphic and zygomorphic, Sexuality- Unisexual and bisexual, Insertion of floral whorls on thalamus- Hypogyny, Epigyny and perigyny, Merous condition- Trimerous, tetramerous and pentamerous. Floral whorls: a) Calyx: Nature- Polysepalous, Gamosepalous; Aestivation- types, Modifications of Calyx- Pappus, Petaloid and Spurred. identification.</p>	SJS
2	September	<p>b) Corolla: Forms of Corolla- i) Polypetalous- Cruciform and Papilionaceous. ii) Gamopetalous- Infundibuliform, Bilabiate, Tubular and Campanulate. iii) Aestivation- types and significance. c) Perianth: Nature- Polytepalous, Gamotepalous.d) Androecium: Structure of typical stamen, Variations- cohesion and adhesion. e) Gynoecium: Structure of typical carpel, number, position, cohesion and adhesion; placentation- types and significance.</p>	SJS
3	September & October	<p>Fruits Introduction and definition. Types of fruits: a) Simple: Dry- Indehiscent - Achene, Cypsela, Nut and Caryopsis; Dehiscent - Legume, Follicle and Capsule, Fleshy: Drupe, Berry, Hesperidium and Pepo. b) Aggregate: Etaerio of Berries and Etaerio of Follicles. c) Multiple fruits: Syconus and Sorosis. Revision</p>	PDK

		<p>ANATOMY Introduction and definition Importance in Taxonomy, Physiology, Ecological interpretations, Pharmacognosy and Wood identification. Revision Types of Tissues Meristmatic tissues: Meristem, characters and types based on origin, position and plane of division, functions. Permanent tissues Complex/Vascular tissues: Components of xylem and phloem, types of vascular bundles and functions: Simple tissues - parenchyma, collenchymas, chlorenchyma and sclerenchyma. Theory Internal Examination</p>	
	October	<p>Types of Tissues (cont.) Epidermal tissues: Epidermis, structure of typical stomata, trichomes, motor cells; functions. Internal Organization of Primary Plant body Internal structure of dicotyledon and monocotyledon root. Internal structure of dicotyledon and monocotyledon stem. Internal structure of dicotyledon and monocotyledon leaf. Seminar and revision Revision and Assignment Question paper discussion</p>	PDK



Prof. P. D. Kad

Syllabus Completion Report
F. Y. B. Sc. [Botany]: 2023-24
CBCS

BO-122; Principles of Plant Sciences
(Semester II, Paper II)

Sr. No	Month	Topics
1	January	Credit - I Introduction to Plant Physiology Diffusion Osmosis Plasmolysis Growth – Definition, Factors affecting growth, plant growth regulators Revision & Assignment
2	February	Structure of Prokaryotic & Eukaryotic plant cell Plant Cell wall Ultra structure of Chloroplast, Mitochondria, ER. Plasma Membrane Revision & Assignment
3	February & March	Introduction to Molecular Biology Structure of DNA Watson & Crick model of DNA Types of Chromosomes Structure and types of RNA DNA replication Cell Cycle in Plants- Mitosis Theory Internal Examination Practical Internal and External Examination
4	April	Meiosis



Prof. P. D. Kad

Syllabus Completion Report

S.Y.B.Sc. Botany (CBCS): 2023 - 24

BO-231. Taxonomy of Angiosperms and Plant Ecology

(Semester III, Paper I)

Sl. No	Month	Topic
1	Aug	<p>1. Introduction to Angiosperm Taxonomy</p> <p>Definition, Scope, objectives and importance of taxonomy, Exploration, Description, Identification, Nomenclature and Classification Concept of Systematics with brief historical background.</p> <p>System of classification: Comparative account of various system of classification, Artificial system-Carl Linnaeus System of classification– Natural System-Bentham and Hooker, Phylogenetic system -Engler and Prantl, APG system -A brief review</p>
2	September	<p>2. Study of plant families</p> <p>Study of following families with reference to systematic position (As per Betham and Hooker's System of classification), Salient features, floral formula, floral diagram and any five examples with their economic importance- Annonaceae , Myrtaceae, Rubiaceae Study of Plant Families</p> <p>Solanaceae, Apocynaceae, Nyctaginaceae and Amaryllidaceae</p> <p>Introduction to Ecology: Definition, concept, scope and interdisciplinary approach, autecology and synecology Species diversity: definition, concept, scope and types: Alpha, Beta, and Gamma diversity. Methods of vegetation sampling: quadrat method, transect method, plot less method</p> <p>Theory Internal Exam</p>
3	October	<p>Ecological grouping of plants with reference to their significance of adaptive external and internal features: a)Hydrophytes, b) Mesophytes c) Xerophytes d) Halophytes with examples.</p> <p>Botanical Nomenclature</p> <p>Concept of nomenclature, brief history, Binomial nomenclature, International code of nomenclature of Algae, Fungi and Plants (ICN), Principles, Rules and Recommendation, Type specimen and its types (Holotype, Paratype, Isotype, Lectotype, Neotype). Concept of Typification, Ranks and endings of taxa names,. Coining of Genus names and species names Single, double and multiple authority citation.</p>
4	November	<p>Revision and Assignment</p> <p>Question paper discussion</p>



Dr. Jagtap S M

Syllabus Completion Report
S.Y.B.Sc. Botany (CBCS): 2023-24 Term II
BO 242: Plant Biotechnology
(Semester IV, Paper II)

Sr. No.	Month	Topics
1	January	Chapter 1 Introduction to Plant Biotechnology History and definition, Scope and importance of plant biotechnology, Current status of biotechnology in India.
2	February	Chapter 2 Plant Tissue Culture Concept of plant tissue culture and cellular totipotency; Basic techniques: Types of culture, Media preparation, sterilization, inoculation, incubation, hardening; Applications with reference to: Micropropagation, Somaclonal variation, Haploid production, Protoplast fusion & Somatic hybrids, Embryo rescue, Production of secondary metabolites; Commercial Plant Tissue culture laboratories in Maharashtra and India.
3	March	Chapter 3 Single Cell Protein (SCP) Concept and definition ; Importance of proteins in diet ; Production of SCP from <i>Spirulina</i> and Yeast; Importance & acceptability of SCP Revision & Assignment Chapter 4 Plant Genetic Engineering Introduction, concept ; Tools of genetic engineering (restriction enzymes, ligases, plasmid vectors); Gene cloning Technique; Applications of plant genetic engineering: insect pest resistance, abiotic stress tolerance, herbicide resistance
4	April	Chapter 5 Genomics, Proteomics and Bioinformatics Genomics- concept, types, methods used for whole genome sequencing; Proteomics-concept, types, methods used in proteome analysis; Bioinformatics-concept, database and its classification, data retrieval tools. Chapter 6 Bioremediation Introduction and concept; Microbial remediation ; Phytoremediation Chapter 7 Biofuel technology Definition, Concept and types of Renewable and nonrenewable energy sources Definition and concept of Biogas, Bioethanol, Biobutanol, Biodiesel & Biohydrogen Revision & Assignment Theory Internal Examination Practical Internal Examination Practical External Examination



Dr.K.M. Nitnaware

Syllabus Completion Report

S.Y.B.Sc. Botany CBCS Pattern

(Semester IV, Paper I) 2023-2024

BO 241: Plant Anatomy and Embryology- 2 Credits (30 Lectures)

Sr. No.	Month	Topic Covered
1	Jan-Feb-2024	Credit-I Plant anatomy: (15 Lectures) 1. Introduction 1.1 Definition 1.2 Scope of plant anatomy 2. Epidermal tissue system 2.1 Structure, types and functions of epidermis 2.2 Structure, types and functions of Stomata 2.3 Epidermal outgrowths- non-glandular and glandular 2.4 Motor cells 3. Mechanical tissue system 3.1 Principles involved in distribution of mechanical tissues with one example each a) Inflexibility, b) Incompressibility, c) Inextensibility and d) Shearing stress 3.2 Vascular tissue system: Structure and function of xylem, phloem and cambium 4. Normal secondary growth 4.1 Introduction 4.2 Normal secondary growth in dicotyledonous stem 4.3 Development of annual rings, periderm, bark, tyloses and lenticel
2	March-24	5. Anomalous secondary growth 5.1 Introduction 5.2 Causes of anomalous secondary growth 5.3 Anomalous secondary growth in: a) Dicotyledonous stem (Bignonia), b) Dicotyledonous root (Raphanus), c) Monocotyledonous stem (Dracaena) Credit-II Plant Embryology (15 Lectures) 6. Introduction 6.1 Definition and scope of plant embryology 7. Microsporangium and male gametophyte 7.1 Structure of tetrasporangiate anther 7.2 Types of tapetum 7.3 Sporogenous tissue 7.4 Microsporogenesis: process and its types 7.5 Types of microspore tetrad 7.6 Male gametophyte: structure and development of male gametophyte
4	April-24	8 Megasporangium and female gametophyte 8.1 Structure 8.2 Types of ovules 8.3 Types of megaspore tetrads 8.4 Female gametophyte: structure of typical embryo sac 8.5 Types of embryo sacs – monosporic, bisporic and tetrasporic 9. Pollination and Fertilization: 9.1 Introduction and definition 9.2 Types of pollination 9.3 Germination of pollen grain 9.4 Entry of pollen tube- porogamy, mesogamy and chalazogamy 9.5 Double fertilization and its significance. 10. Endosperm and embryo 10.1 Endosperm: Types – nuclear, helobial and cellular. 10.2 Structure of Dicotyledonous and Monocotyledonous embryo. Revision and MCQ discussion



Dr Jagtap S.M.

Syllabus Completion Report

T. Y. B. Sc. - Botany: 2022 - 23

BO: 351 Cryptogamic Botany

(Semester– V; Paper – I)

Sr. No	Month	Topics
1	October	<p>Introduction: Cryptogams- meaning. Types- Lower Cryptogams, brief Review with examples</p> <p>Algae: General characters, distribution, Thallus organization, habit and Habitat reproduction and Classification (G.M.Smith 1955) up to classes.</p> <p>Study of life cycle of algae with reference to taxonomic position, Occurrence, Thallus structure, and reproduction of <i>Nostoc</i>, <i>Oedogonium</i> <i>Chara</i>, <i>Sargassum</i> and <i>Batrachospermum</i>.</p> <p>Economic importance of algae- Role in industry, agriculture, fodder and medicine.</p>
2	November	<p>Fungi: General characters, Habit and habitats, thallus organization, cell wall composition, nutrition and Classification. (Alexopoulos and Mims 1979) up to classes.</p> <p>Study of life cycle fungi with reference to taxonomic position, thallus structure, and reproduction of <i>Mucor</i> (Zygomycotina), <i>Saccharomyces</i> (Ascomycotina), <i>Puccinia</i> (Basidiomycotina), <i>Cercospora</i></p> <p>Theory Internal Exam</p>
3	December	<p>Study of life cycle of fungi with reference to taxonomic position, thallus structure, and reproduction of <i>Penecillium</i></p> <p>Symbiotic Associations - Lichens, <i>Mycorrhiza</i> and their significance</p> <p>Revision, Assignment & question paper discussion</p> <p>Practical Internal Exam</p>



Prof. P.D.Kad

Syllabus Completion Report

T. Y. B. Sc. - Botany: 2022-23

BO.354: Plant Ecology

(Semester– V; Paper – IV)

Sr. No	Month	Topics
1	August	Introduction , interrelationship between the living world and the environment, levels of organization, components and dynamism of ecosystem, homeostasis, niche concept, concept of limiting factors
2	September	Population ecology : Definition, characteristics, population growth form, r and k selection Community ecology : Introduction and Definition, community structure, physiognomy, Raunkiaer's life form classification, keystone species, edge and ecotone Revision & Assignment
3	October	Biogeochemical cycles : The carbon cycle, Nitrogen cycle, Phosphorus cycle, and Hydrologic cycle
4	November	Ecological Impact Assessment (EIA) Introduction, Historical Review of EIA, Objectives of EIA, Stages of EIA process: Screening; Scoping; Baseline study; Impact prediction and assessment; Mitigation; Producing Environmental Impact Statement (EIS); EIS review; Decision making; Monitoring, Compliance and Enforcement; Benefits of EIA. Remote Sensing Definition, basic principles, process of ecological data acquisition and interpretation, global positioning system, application of remote sensing in ecology. Ecological management : Concepts, sustainable development, sustainability indicators Theory Internal Exam
5	December	Environmental Audit Meaning and concept, need, objectives, benefits, types, audit protocol, process, certification, personnel environmental audit Biogeography : Floristic realms, speciation and its types, biogeographic regions of India, Plant indicators Revision, Seminars and Question paper discussion Practical Internal Exam



Prof. P. D. Kad.

Syllabus completion report

T. Y. B. Sc. - Botany: 2023-24

BO: 365 Advanced Plant Biotechnology

(Semester– VI; Paper – V)

Sr. No	Month	Topics
1	January	Biotechnology: Introduction, Traditional and modern Biotechnology. Impact of Biotechnology on Health care, Agriculture, and Environment Plant Tissue Culture: Concepts of Cell theory & Cellular totipotency, Landmarks in plant tissue culture. Pluripotency, Differentiation, dedifferentiation, redifferentiation, Hormones used in PTC, 'Explant' for plant tissue culture and Response of explants in vitro– callus formation,
2	February	Organogenesis (direct and indirect) and embryogenesis (direct and indirect). Micro propagation of Banana (in detail from Selection of explant to hardening and marketing) Techniques of Genetic Engineering and Methods of gene transfer in Plants- Cryopreservation and Germplasm Conservation Definition and concept, techniques of cryopreservation, cold storage, long term and short term storage, applications. Germplasm Conservation: Preservation of Cell, tissue, organ, whole organism. Concept of Gene Bank, DNA Bank, Seed Bank, Pollen Bank etc
3	March	Nano- biotechnology : Definition and concept, Applications of nanotechnology in agriculture (Fertilizers and pesticides) Biotechnology and Society: Biotechnology- Benefits, GM foods and its safety, Recombinant foods and religious beliefs, Recombinant therapeutic product for human health care. Patenting of biotechnological inventions and Intellectual property rights.
4	April	Microbial Biotechnology: Biochemistry of fermentation, Microorganism used in fermentation, fermentable substrate, Ethanol fermentation methods, Distilleries producing alcohols. Commercial production: Alcoholic beverages, organic acids, citric acids. Advantages of fermentation. Transgenic Plants as Bioreactors: Metabolic engineering of starch, cyclodextrins, fructans, Bioplastics, Genetically engineered plants as protein factories, Production of therapeutic proteins from plants. Theory Internal Examination Practical Internal Examination Practical External Examination



Dr. K.M. Nitaware

Syllabus Completion Report

T. Y. B. Sc. - Botany: 2023-24

BO.362: Biochemistry

(Semester– VI; Paper – II)

January	<p>Water: The solvent of life: Physical properties of water, structure of water molecule, polarity of water molecule, weak interactions in aqueous solutions.</p> <p>Amino acids and proteins: Structure, classification, properties and functions of amino acids. Structure (primary, secondary, tertiary and quaternary), properties and functions of proteins Biological disorders of amino acid metabolism. Commercial applications.</p> <p>Enzymes: Definition, nature of enzymes and co-factors, classification and properties of enzymes, active site. Mechanism of enzyme action: free energy, activation energy, binding energy, transition state, lock and key hypothesis, induced fit theory. Factors affecting enzyme activity: pH, temperature, substrate concentration, enzyme concentration. Enzyme inhibition: Competitive, uncompetitive, non-competitive. Reversible and irreversible inhibition, feedback inhibition</p>
February	<p>Carbohydrates: Definition, classification of carbohydrates- Monosaccharides: aldoses and ketoses, configurations, linear to ring structure; Oligosaccharides: glycosidic bond, reducing and non-reducing sugars; Polysaccharides: homopolysaccharides, heteropolysaccharides, examples, their structures, locations and role. Properties and functions of carbohydrates. Commercial applications.</p> <p>Lipids: Definition, classification of lipids: simple, conjugate and derived lipids, properties and functions of lipids. Biological disorders of lipid metabolism. Commercial applications.</p> <p>Vitamins: Definition, classification of vitamins. source and functions of vitamins.</p> <p>Revision, assignment</p>
March	<p>Foundation of Biochemistry: From molecules to the first cell (origin of a cell), Miller and Urey experiment. Biomolecules of a cell, functional groups in biomolecules, conformations and configurations of biomolecules.</p> <p>Theory internal examination</p>
April	<p>Practical external and internal examination</p>



Prof. P. D. Kad

Syllabus Completion Report
T. Y. B. Sc. - Botany: 2023-24
BO.363: Plant Pathology
(Semester– VI; Paper – III)

January	<p>Fundamentals of Plant Pathology: Introduction, Important terminology-Incitants, Host, Symptoms, Parasite, Pathogen, Inoculum, Penetration, Infection, Incubation, Disease. Economic importance of plant diseases, History of plant pathology, Introduction to Indian Agriculture Research Institute (IARI), International Crop Research Institute for Semi-Arid Tropics (ICRISAT), Contribution of Anton De Bary and Prof. B.B. Mundkur</p> <p>Disease Development: Concept of disease cycle, Inoculation, Prepenetration, Penetration, Infection, Dissemination. Epidemics-Forms, Decline, Exponential model.</p> <p>Defense Mechanisms: Concept and Definition, Types-Preexisting- Structural and chemical, Induced- Structural and Biochemical.</p> <p>Methods of Studying Plant Diseases. Macroscopic study, Microscopic study, Koch's postulates. Types of culture Media, Pure culture methods- Streak plate, Pour plate, Spread plate.</p>
February	<p>Fungal Plant Diseases Introduction to fungi as plant pathogens. Study of Diseases- Downy mildew of Grapes, Head smut of Jowar, Tikka diseases of Groundnut with reference to causal organism, symptoms and disease management.</p> <p>Bacterial Plant Diseases. Introduction to bacteria as plant pathogens, Study of Diseases- Citrus Canker, Black arm of Cotton with reference to causal organism, symptoms and disease management.</p> <p>Mycoplasma Plant Diseases: Introduction to Mycoplasma as plant pathogens, Study of Diseases- Grassy shoot disease of sugarcane, Little leaf of brinjal with reference to causal organism, symptoms and disease management.</p> <p>Viral Plant Diseases: Introduction of Virus as plant pathogens. Study of Diseases- Papaya Mosaic Disease, Bunchy top of Banana with reference to causal organism, symptoms and causal organism</p> <p>Nematodal Plant Diseases: Introduction to Nematodes as plant pathogens. Study of Diseases- Root knot diseases of vegetables, Soyabean cyst Nematodes with reference to causal organism, symptoms, Integrated management of Nematodal diseases</p> <p>Revision, assignment</p>
March	<p>Non-Parasitic Diseases. The impact and abiotic causes- Temperature, Soil moisture and relative humidity, Poor oxygen, Poor light, Air pollutants, mineral deficiencies. Herbicidal injury, Study of Mango necrosis, Black Heart of Potato.</p> <p>Principles of plant diseases control: General account, Quarantine, Eradication, cultural control practices, Biological control. Curative measures, chemical control, Use of Effective Microorganism solution (EMS), Microbial Pesticides.</p> <p>Revision, assignment</p> <p>Theory internal examination</p>
April	Practical external and internal examination



Prof. P. D. Kad

Syllabus Completion Report

T.Y.B.Sc. Botany (2019 Pattern)

(Semester VI, Paper VI) 2023-2024

BO-366- Plant Breeding and Seed Technology

Sr. No.	Month	Topic Covered
1	Dec-23-Jan-2024	<p>Credit-I –Plant Breeding 15</p> <p>1 Introduction: Definition, Scope and objectives and History of Plant breeding in India</p> <p>2 Techniques and practices of plant breeding</p> <p>A. Plant Introduction □ Definition □ Types (Primary and Secondary) □ Procedure □ Merits and Demerits □ Important Achievements</p> <p>B. Selection methods □ Concept, □ Types of selections –mass selection, pure line selection and clonal selection. □ Advantage and disadvantages of selection □ Achievements of selection breeding</p> <p>C. Hybridization □ Definition, Concept and Objectives □ Precaution to be taken during hybridization □ Types: Intervarietal and Distant □ General procedure of hybridization □ Methods of hybridization: Pdigree and bulk</p> <p>3 Advanced techniques in Plant breeding A. Mutation breeding - □ Definition and concept □ Mutagens (Physical and Chemical) □ Mutants □ Types of mutation (Spontaneous and Induced) □ Application of mutation breeding □ Limitations of mutation breeding B. Tissue Culture □ Definition and concept □ Totipotency □ Application of tissue, embryo and anther culture in seed production</p>
2	Feb-24	<p>Credit-II - SEED TECHNOLOGY 4 Introduction to Seed Technology □ Seed as a basic input in agriculture □ Classes of seed 1. Nucleus 2. Breeder 3. Foundation 4. Certified Role of seed technology</p> <p>5. Seed legislation □ Introduction □ Seed legislation in India (Seed Act)</p> <p>6 Seed Production □ Introduction □ National Seed Corporation (NSC) and its objectives □ State Seed Corporation (SSC) and its objectives □ General procedure for Seed Production , Location and Season, Land requirement ,Importance of soil and water testing ,Cultural practices, Isolation distance , Plant protection ,Weed Control , Rouging ,Harvesting , Threshing , Seed Processing.</p> <p>7 Seed Certification □ Definition, Objectives and Concept □ Phases of Seed Certification □ General procedure of seed certification □ Field inspection □ Duties of seed inspector</p>

3	March-24	8 Seed Testing A. Physical Purity Analysis <input type="checkbox"/> Definition of purity components <input type="checkbox"/> Physical Purity Work Board <input type="checkbox"/> Procedure B. Moisture Testing <input type="checkbox"/> Concept <input type="checkbox"/> Air oven method <input type="checkbox"/> Digital Moisture Meter C. Germination testing <input type="checkbox"/> Definition and objectives <input type="checkbox"/> Procedure and methods for germination testing (Paper, Sand and Soil) <input type="checkbox"/> Seedling evaluation (Normal Seedlings, Abnormal Seedlings, Multigerm Seed Units and Non-germinated Seeds)
4	April-24	9 Seed Pathology and Entomology <input type="checkbox"/> Definition <input type="checkbox"/> Seed Borne pathogens , Fungi ,Bacteria , Viruses <input type="checkbox"/> Influence of seed borne pathogens on seed production <input type="checkbox"/> Common insect pest and its impact on seed production, 10 Seed Storage <input type="checkbox"/> Definition and Concept <input type="checkbox"/> Seed treatment <input type="checkbox"/> Management of seed storage structures , Sanitization , Dehumidification , Fumigation Revision and MCQ discussion



Dr Jagtap S.M.

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