

Satyaniketan's
Adv.M.N.Deshmukh Arts, Science and Commerce College Rajur
 Tal. Akole, Dist. Ahmednagar. Pin. 422604.

T.Y.B.Sc. Botany CBCS Pattern (Semester V, Paper VI) 2020-2021

Unit Planning (2023-24)

Paper VI: BO356: Genetics

Prof. V. B. Yelmame

Sr. No	Month	Unit	Topic	Lecture
Credit - I				
1.	June	Introduction to Genetics	History, Definition, Concept, branches and applications of Genetics.	01
2.	July	Mendelism	Genetical terminology, Monohybrid cross, Law of dominance, Incomplete Dominance, Law of segregation, Dihybrid cross, Dihybrid ratio, Law of independent assortment, Back cross and Test cross.	04
3.	July	Neo Mendelism (Gene Interaction)	Genetic interaction, Epistatic interactions – supplementary gene (recessive epistasis 9:3:4), Inhibitory genes (13:3), Masking genes (12:3:1), NonEpistatic inter-allelic genetic interactions-Complementary genes (9:7), Duplicate genes (15:1)	03
4.	August	Multiple alleles	Definition, Concept, Characters of multiple alleles, Examples of multiple alleles – Blood group in human and self-incompatibility in Nicotiana.	02
5.	August	Linkage, Recombination and Crossing Over	Linkage- Definition and Types, Crossing over: Definition and Types, Construction of a linkage map by two point test cross and three point test cross, Recombination: Concept, definition and types	04
6.	August	Mutation	Concept, definition and types	01

Credit - II				
7.	September	Numerical alterations of chromosomes	Euploidy, Aneuploidy-Concept and Types, Aneuploidy in Plants and Human, Polyploidy in Plants & Animals, Induced Polyploidy, applications of Polyploidy	03
8.	September	Structural alterations of chromosomes	Types, cytology and genetic effects of Deletion, Duplication Inversion and Translocation with examples.	04
9.	October	Cytoplasmic & Quantitative Inheritance	Concept of quantitative inheritance, Inheritance of quantitative trait in Maize (Cob length), Cytoplasmic inheritance Definition and concept, Chloroplast-Variegation in Four O'clock plants, Mitochondria- Petite mutants in yeast.	04
10.	October	Sex Linked Inheritance	Concept of Sex chromosomes & autosomes, Inheritance of X- linked genes –Inheritance of color blindness in humans, Inheritance of Y-linked (Holandric genes) in humans, Sex influenced genes, Sex-limited genes.	04

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T.Y.B.Sc. Botany CBCS Pattern (Semester V, Paper X) 2020-2021

Unit Planning (2023-24)

Paper VI: BO 3510: Medicinal Botany

Prof. V. B. Yelmame

Sr. No	Month	Unit	Topic	Lecture
Credit - I				
1.	June	Medicinal Plants	History, Scope and Importance	01
2.	June	Indigenous Medicinal Sciences	Definition and Scope	01
3.	July	Ayurveda	History, origin, panchamahabhutas, saptadhatu and tridosha concepts, Rasayana, plants used in ayurvedic treatments	04
4.	July	Siddha	Origin of Siddha medicinal systems, Basis of Siddha system, plants used in Siddha medicine.	02
5.	August	Unani	History, concept: Umoor-e- tabiya, tumors treatments/ therapy, polyherbal formulations	02
6.	August	Conservation of endangered and endemic medicinal plants:	Definition: endemic and endangered medicinal plants, Red list criteria; In situ conservation: Biosphere reserves, sacred groves, National Parks; Ex situ conservation: Botanic Gardens, Ethnomedicinal plant Gardens.	05

Credit - II				
7.	September	Propagation of Medicinal Plants	Objectives of the nursery, its classification, important components of a nursery, sowing, pricking, use of green house for nursery production, propagation through cuttings, layering, grafting and budding.	05
8.	October	Ethnobotany and Folk medicines	Definition; Ethnobotany in India: Methods to study ethnobotany; Applications of Ethnobotany: National interacts, Palaeo-ethnobotany.	05
9.	October	Folk medicines	Folk medicines of ethnobotany, ethnomedicine, ethnoecology, ethnic communities of India. Application of natural products to certain diseases Jaundice, cardiac, infertility, diabetics, Blood pressure and skin diseases.	05

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S.Y.B.Sc. Botany CBCS Pattern (Semester III, Paper II) 2020-2021

BO 232: Plant Physiology - 2 Credits (30 Lectures)

Unit Plan Prof. V. B. Yelmame

Year 2023-24

Sr. No	Month	Unit	Topic	Lecture
Credit - I				
1.	June	Introduction to Plant Physiology	Scope and applications of plant physiology	02
2.	June	Absorption of water	2.1 Role of water in plants 2.2 Mechanisms of water absorption with respect to crop plants 2.3 Factors affecting rate of water absorption	03
3.	July	Ascent of sap	3.1 Introduction and definition. 3.2 Transpiration pull or cohesion-tension theory, evidences and objections 3.3 Factors affecting ascent of sap	03
4.	July	Transpiration	4.2 cuticular, lenticular and stomatal Resp ⁿ 4.3 Structure of stomata 4.4–Steward's hypothesis, active K ⁺ transport mechanism 4.5 Factors affecting the rate of transpiration 4.6 Significance of transpiration 4.7 Antitranspirants 4.8 Guttation 4.9 Exudation	07

Credit - II				
5.	August	Nitrogen metabolism	5.1 Introduction and role of nitrogen in plants 5.2 Nitrogen fixation by Rhizobium and BGA 5.2.1 Symbiotic nitrogen fixation, nitrogenase enzyme- structure and function 5.2.2 Non-symbiotic nitrogen fixation 5.3 Importance and production technique of BGA 5.4 Denitrification, ammonification and nitrification 5.5 Reductive amination and transamination	07
6.	October	Seed dormancy and germination	6.1 Definition, types of seed dormancy and germination 6.2 Methods to break seed dormancy 6.3 Metabolic changes during seed germination 6.4 Role of phytohormones to improve seed germination 6.5 Vigor Index	04
7.	October	Physiology of flowering	7.1 Photoperiodism – Concept, definition, short day plants, long day plants and day neutral plants. 7.2 Phytochrome theory, role of phytohormones in induction and inhibition of flowering 7.3 Applications of photoperiodism 7.4 Vernalization–concept and definition, mechanism of vernalisation, applications of vernalisation and devernialization	04

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T.Y.B.Sc. Botany CBCS Pattern (Semester III, Paper II) 2020-2021

Unit Planning (2023-24)

Paper VI: BO366: Plant Breeding and seed technology

Prof. V. B. Yelmame

Sr. No.	Month & Date	Unit	Topic	Lecture
Credit I –Plant Breeding				
8.	06/02/2023	Introduction	Definition, Scope and objectives	01
9.	07/02/2023	Techniques and practices of plant breeding	1. Plant Introduction	02
	09/02/2023		2. Selection methods	03
	14/02/2023		3. Hybridization	04
10.	20/02/2023	Advanced techniques in Plant breeding	1. Mutation breeding	03
	24/02/2023		2. Tissue Culture	02
Credit II –Seed Technology				
11.	27/02/2023	Introduction to Seed Technology	Classes of seed	02
12.	01/03/2023	Seed legislation	Introduction & Seed legislation in India (Seed Act)	01
13.	02/03/2023	Seed Production	National Seed Corporation (NSC) State Seed Corporation (SSC)	03
14.	06/03/2023	Seed Certification	Phases of Seed Certification	02
15.	09/03/2023	Seed Testing	1. Physical Purity Analysis 2. Moisture Testing 3. Germination testing	03
16.	13/03/2023	Seed Pathology and Entomology	Definition & Seed Borne pathogens	02
17.	15/03/2023	Seed Storage	Definition & Seed Treatment	02

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T.Y.B.Sc. Botany CBCS Pattern (Semester III, Paper II) 2020-2021

Unit Planning (2023-24)

Paper IV: BO364: Evolution & Population Genetics

Prof. V. B. Yelmame

Sr. No.	Month & Date	Unit	Topic	Lecture
Credit I : Evolution				
1.	16/03/2023	Organic Evolution	Origin of life, Organic Evolution Historical account, Gaia Hypothesis, Theory of Panspermia	06
2.	23/03/2023	Organic Evolution	Concept Pre-Darwinian period Darwinism	05
3.	28/03/2023	Evidences of Evolution	Direct evidences Indirect evidences	04
Credit II : Population Genetics				
4.	03/04/2023	Evolution Through Ages	Fossils and Geological Time scale Conditions of fossilization Geological Time scale: Eras, Periods, epochs,	05
5.	08/04/2023	Population Genetics and Evolution	Mendelian population Gene Pool Hardy-Weinberg law Genetic polymorphism	05
6.	17/04/2023	Speciation and Isolating Mechanisms	Species and Races Allopatric and Sympatric Populations Spatial & Ecological;, Seasonal Isolation Hybrid in viability	05

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S.Y.B.Sc Unit Planning (2023-24)

Paper II: BO 242: Plant Biotechnology

Prof. V. B. Yelname

Sr. No.	Month & Date	Unit	Topic	Lecture
Credit I				
1.	06/02/2023	Introduction to Plant Biotechnology	History and definition History and definition	03
2.	09/02/2023	Plant Tissue Culture	Concept Basic techniques Applications Commercial Plant Tissue culture	08
3.	20/02/2023	Single Cell Protein	Concept Importance Production of SCP	04
Credit II				
4.	01/03/2023	Plant Genetic Engineering	Introduction & concept Tools of genetic engineering Gene cloning & Applications	05
5.	07/03/2023	Genomics, Proteomics and Bioinformatics	Genomics Proteomics Bioinformatics	05
6.	10/03/2023	Bioremediation	Introduction & concept Microbial remediation Phytoremediation	03
7.	16/03/2023	Biofuel technology	Definition, Concept & types Biogas Bioethanol	02