

# Government Degree College, Rajampeta

Department of Botany

ANUAL CURRICULAR PLAN -2023 – 24

Semesters: I

Name of the Lecturer: Dr.B. Adinarayana Year: I Year Class: Botany (Major) Paper: 1.2 -Introduction to Applied Biology

Sl.no	Month	Week	Hours	Syllabus /Topic	Additional Inputs	Curricular Activity				Co -Curricular Activity				Remarks
						Activity Conducted	Hours Alloted	Whether conducted	If ot, Alternate Date	Activity Conducted	Hours Alloted	Whether conducted	If ot, Alternate Date	
1	AUGUST	1												
		2												
		3	3+2	Syllabus and Single subject pattern explained <b>Unit-1: Essentials of Microbiology:</b> Applications of Microorganisms in industry, Agriculture, and Environment	PPT	Theory	5	YES		Group Discussion	1hr	Yes		
		4	3+2	Structure of fungi, Archaea, virus and Bacteria Types of immunity-Contributions of Robert Koch, Jenner, Lister and Pastuer	PPT	Theory	5	YES		Certificate Course in Hydroponics Commences				
2	SEPTEMBER	1	3+2	<b>Unit-2-Essentials of Biochemistry:</b> Carbohydrates-classification major groups of carbohydrates.	PPT	Theory	5	YES		Assignment		YES		
		2	3+2	Lipids and classification of lipids, Fatty acids-significance of lipids-Amino acids,	PPT	Theory	5	YES		Field Trip	One Day	Yes		
		3	3+2	Proteins, Nucleic acids-Watson and Crick model of DNA, Basic concept of Metabolism-Catabolism and anabolism	PPT	Theory	5	YES		Seminars		YES		
		4	3+2	<b>Unit-3-Essentials of Biotechnology:</b> Concept and history of Biotechnology-Applications of Biotechnology-Significance of Transgenic plants and animals	PPT	Theory	5	YES		Quiz		YES		

Signature of the Lecturer

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3	O C T O B E R	1	3+2	Bioremediation-various types, Biofuels, Biopesticides, Biofertilizers-Restriction Enzymes, gene manipulation	PPT	Theory	5	YES		Mentor Mentee	1hr	YES		
		2	3+2	Cloning vectors, Phages, Plasmids, BACs, YACs HACs-Physical gene transfer methods,	PPT	PPT	5	YES						
		3	3+2	I-Term Holidays	PPT	Theory	5	YES						
		4		Gene transfer methods- Bt-Cotton-Cloning vectors-salt tolerant Transgenic plants	PPT	Theory	5	YES						
4	N O V E M B E R	1		<b>Unit-4-Analytical Tools and Techniques in Biology applications:</b> Applications of PCR in Forensics-Applications of Finger printing in forensics-Immune blotting technique-ELISA	PPT	Theory	5	YES						
		2		Gene therapy -Eugenics Monoclonal antibodies	PPT	Theory	5	YES						
		3		<b>Unit-5-Biostatistics and Bioinformatics:</b> Statistics-Various methods of collecting Data	PPT	Theory	5	YES						
		4		Chief sources of secondary data-Various types of Tabulation methods Arithmetic average	PPT	Theory	5	YES						
5	D E C E M B E R	1		Mean-merits and demerits Median-Limitations, Mode-merits and demerits.	PPT	Theory	5	YES						
		2		Range- calculation of Range-limitations Probability, Salient features of biological data base	PPT	Theory	5	YES						
		3		NCBI,EBI,Database Gen Bank										
		4												

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# Government Degree College, Rajampeta

Department of Botany

ANNUAL CURRICULAR PLAN -2023 – 24

Semester: II

Name of the Lecturer: Dr.B. Adinarayana

Year: I Year

Class: Botany (Major)

Paper: 2.2Origin of life and Diversity of Microbes

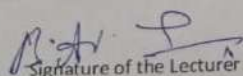
Sl.no	Month	Week	Hours	Syllabus /Topic	Additional Inputs	Curricular Activity				Co-Curricular Activity				Remarks
						Activity Conducted	Hours Alloted	Whether conducted	If ot, Alternate Date	Activity Conducted	Hours Alloted	Whether conducted	If ot, Alternate Date	
1	JANUARY	1												
		2												
		3	3+2	Major Paper-II syllabus Discussion Unit-1: Origin of life and Viruses: Origin of life, concept of primary Abiogenesis; Miller and Urey experiment Pasteur experiments, germ theory of diseases.	PPT	Theory & Practicals	5	YES	-	Group Discussion	1hr	YES	-	
		4	3+2	Five kingdom classifications of R.H. Whittaker Shape and symmetry of viruses; structure of TMV and Gemini virus, transmission of plant viruses and their control.	PPT	Theory & Practicals	5	YES		Assignment		YES		
2	FEBRUARY	1	3+2	Significance of viruses in vaccine production, bio-pesticides and as cloning vectors. Unit-2: Special groups of Bacteria: General characteristics,	PPT	Theory & Practicals	5	YES		Field Trip	One day	YES		
		2	3+2	Outline classification and economic importance of following special groups of bacteria: a) Archaeobacteria b) Chlamydiae c) Actinomycetes d) Mycoplasma e) Phytoplasma f) Cyanobacteria Culture and cultivation of Spirulina	PPT Bio-Visual Charts	Theory & Practicals	5	YES		Seminars		YES		
		3	3+2	Unit-3: Eubacteria :Occurrence, distribution and cell structure of eubacteria.Classification of Eubacteria based on nutrition. Reproduction :Conjugation, Transformation, Transduction	PPT	Theory & Practicals	5	YES		Quiz	1hr	YES		
		4	2+2	Economic importance of Eu-bacteria with reference to their role in Agriculture and Industry (fermentation and medicine) Unit-4: Soil microbes – interactions Distribution of soil microorganisms in soil.	PPT	Theory & Practicals	5	YES						

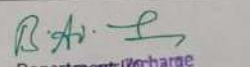
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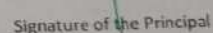
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3	M A R C H	1	3+2	Factors influencing the soil microflora- Role of microorganisms in soil fertility; Interactions among microorganisms, mutualism, comensalism, competition, amensalism, parasitism, predation;	PPT	Theory & Practicals	5	YES		Mentor-Mentee	1 hr	YES		
		2	3+2	Microorganisms of rhizosphere, phyllosphere and spermophere; microbial interactions and their effect on plant growth.	PPT	Theory & Practicals	5	YES						
		3	3+2	Unit-5: Microbes in agriculture :Mass production, mode of applications, advantages and limitations of bacterial inoculants (Rhizobium, Azotobacter, Azospirillum, Cyanobacteria)	PPT	Theory & Practicals	5	YES						
		4	3+2	Role of Frankia and VAM in soil fertility; Microbial biopesticides: mode of action, factors influencing, target pests; microbial herbicides.	PPT	Theory & Practicals	5	YES						
4	A P R I L	1		REVISION										
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**Government Degree College, Rajampeta**  
Department of Botany

**SEMESTER-IV**

Name of the Lecturer: Dr.B. Adinarayana

Year: II Year

Class: B.Sc(BZC&BCCS)

Paper: IV :Plant Physiology and Metabolism

Sl.no	Month	Week	Hours	Syllabus /Topic	Additional Inputs	Curricular Activity				Co-Curricular Activity				Remarks
						Activity Conducted	Hours Alloted	Whether conducted	If ot, Alternate Date	Activity Conducted	Hours Alloted	Whether conducted	If ot, Alternate Date	
1	JANUARY	1												
		2												
		3	3+2	<b>Unit – 1: Plant-Water relations:</b> Importance of water to plant life, physical properties of water, diffusion, imbibition, osmosis, water potential, osmotic potential, pressure potential.	PPT	Theory	5	YES	-	Group Discussion	1hr	YES	-	
		4	3+2	Transpiration stomata structure and mechanism of stomatal movements (K <sup>+</sup> ion flux). Mechanism of phloem transport; source-sink relationships.	PPT	Theory	5	YES		Certificate Course in Hydroponics Commences		YES		
2	FEBRUARY	1	3+2	<b>Unit – 2: Mineral nutrition, Enzymes and Respiration:</b> Essential macro and micro mineral nutrients and their role in plants; symptoms of mineral deficiency- Absorption of mineral ions; passive and active processes- Characteristics, nomenclature and classification of Enzymes. Mechanism of enzyme action, enzyme kinetics	PPT	Theory	5	YES		Field Trip	One day	YES		
		2	3+2	<b>Respiration:</b> Aerobic and anaerobic, Glycolysis, Kreb's cycle, Electron transport system photophosphorylation	PPT Bio-Visual Charts	Theory	5	YES		Assignment		YES		
		3	3+2	<b>Unit – 3: Photosynthesis and Photorespiration:</b> Photosynthesis: Photosynthetic pigments, absorption and action spectra; Red drop and Emerson enhancement effect- Concept of two photosystems; mechanism of photosynthetic electron transport and evolution of	PPT	Theory	5	YES		Seminars	1hr	YES		
		4	2+2	oxygen; photophosphorylation Carbon assimilation pathways (C3, C4 and CAM); Photorespiration - C2 pathway	PPT	Theory	5	YES		Quiz				

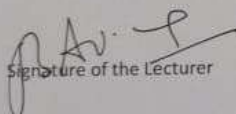
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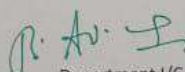
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3	M A R C H	1	3+2	<b>Unit – 4: Nitrogen and lipid metabolism:</b> Biological n-fixation, Abiotic and biotic n-fixing organisms.-Nitrogenase enzyme system. Lipid metabolism:classification of plant lipids	PPT	Theory	5	YES		Mentor-Mentee	1 hr	YES		
		2	3+2	Saturated and unsaturated fatty acids. Anabolism of tryglycerides-Beta oxidation of fatty acids.	PPT	Theory	5	YES						
		3	3+2	<b>Unit – 5: Plant growth - development and stress physiology:</b> Growth and Development-Definition, Phases and kinetics of growth. Physiological effects of Growth regulators.	PPT	Theory	5	YES						
		4	3+2	Physiology of Flowering, Seed germination and senescence-Physiological Changes	PPT	Theory	5	YES						
4	A P R I L	1		REVISION										
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# Government Degree College, Rajampeta

Department of Botany

ANUAL CURRICULAR PLAN -2023 – 24

Semester: V

Name of the Lecturer: Dr.B. Adinarayana				Year: III Year		Class: B.Sc(BZC&BCCS)		Paper: VI : C6-Plant Tissue Culture						
Sl.no	Month	Week	Hours	Syllabus /Topic	Additional Inputs	Curricular Activity				Co-Curricular Activity				Remarks
						Activity Conducted	Hours Alloted	Whether conducted	If not, Alternate Date	Activity Conducted	Hours Alloted	Whether conducted	If not, Alternate Date	
1	AUGUST	1												
		2												
		3	3+3	Unit-1: Basic Concepts of plant tissue Culture: Plant tissue culture: Definition, history, scope and significance.	PPT	Theory	5	YES		Group Discussion	1hr	Yes	-	-
		4	3+3	Totipotency,differentiation,dedifferentiation,and redifferentiation	PPT	Theory	5	YES		Certificate Course in Hydroponics Commences			-	-
2	SEPTEMBER	1	3+3	Role of PGRs in plant tissue culture Different explants for tissue culture	PPT	Theory	5	YES		Assignment		YES	-	-
		2	3+3	Unit-2: Infrastructure, sterilization techniques, culture media: Tissue culture lab design	PPT	Theory	5	YES		Field Trip	One Day	Yes	-	-
		3	3+3	Nutrient media:Composition of commonly used nutrient culture media, Culture medium preparation methods	PPT	Theory	5	YES		Seminars		YES	-	-
		4	3+3	Unit-3: Application of Plant Tissue culture: <i>in vitro</i> propagation : Callus culture, direct and indirect organogenesis soma clonal variations	PPT	Theory	5	YES		Quiz		YES	-	-

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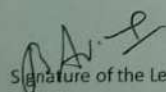
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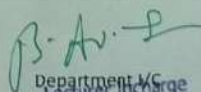
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	O C T O B E R	1	3+3	Micro propagation, shoot tip culture	PPT	Theory	5	YES		Mentor Mentee	1hr	Yes	-	-
		2	3+3	Somatic embryogenesis and synthetic seeds.	PPT	PPT	5	YES					-	-
		3	3+3	<b>I-Term Holidays</b>	PPT	Theory	5	YES					-	-
		4			PPT	Theory	5	YES					-	-
4	N O V E M B E R	1		<b>Unit-4: Application of Plant Tissue culture: Plant product formation and gene preservation :</b> Types of <i>in vitro</i> systems for secondary metabolites production	PPT	Theory	5	YES					-	-
		2		Production of secondary metabolites	PPT	Theory	5	YES					-	-
		3		Germplasm conservation: cryopreservation methods, slow growth, applications and limitations; cryoprotectants.	PPT	Theory	5	YES					-	-
		4		<b>Unit-5: Application of Plant Tissue culture: Plant gene improvement:</b>	PPT	Theory	5	YES					-	-
5	D E C E M B E R	1		Protoplast isolation, culture and fusion and hybrids, Plant transformation techniques,	PPT	Theory	5	YES					-	-
		2		BT-cotton, BT Mustard and biosafety concerns	PPT	Theory	5	YES					-	-
		3											-	-
		4											-	-

  
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