

M.V.R. DEGREE COLLEGE
(UG And PG Courses)
 (Affiliated to Andhra University)
 An Institution of Priyadarshini Educational Academy)
 NAAC ACCREDITED COLLEGE



Dr.V.Rama Rao, M.A.,Ph.D.,
 Secretary & Correspondent

Dr.A.Balakrishna, M.Sc.,Ph.D.,
 Principal

Department of Botany
Master of Science M.Sc Botany
Course Out comes COs

The M.Sc. Botany programme aims to give confidence for students to take dependability for developing themselves throughout their studies at our College, affiliated to Andhra University and will reflect the following postgraduate attributes.

S.No	Name of the course (Paper)	Course Code	Course objective and Outcome
SEMESTER-1			
1	Biology and diversity of algae and bryophytes	Core paper 101	Course Objectives: This course aims to increase the understanding of the students about the diversity of lower plants, their classification, structure and growth. Course Learning Outcomes: The students will develop understanding about the diversity, identification, classification and economic importance of lower plants.
2	Biology and diversity of bacteria, Viruses and fungi	Core Paper 102	Course Objectives: This course aims to increase the understanding of the students about the diversity of microorganisms including fungi, their classification, structure and growth. Course Learning Outcomes: The course will increase the understanding of the students about the classification, structure, role and infectious cycle of microbes and Fungi.
3	Cell biology of plants	Core Paper 103	Course Objectives: The paper deals with Mendelian and non-Mendelian inheritance, quantitative genetics, molecular markers and linkage mapping, prokaryotic and eukaryotic genome-structure, gene function and regulation, epigenetic, cytogenetic and crop



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			<p>evolution.</p> <p>Course Out Comes:</p> <ol style="list-style-type: none"> 1. They understand the pattern of inheritance in various life forms. 2. They develop strong fundamentals basics for further molecular studies.
4	Cytology and Cytogenetics	Core Paper 104	<p>Course Objectives:</p> <p>The paper deals with Mendelian and non-Mendelian inheritance, quantitative genetics, molecular markers and linkage mapping, prokaryotic and eukaryotic genome-structure, gene function and regulation, epigenetics, cytogenetics and crop evolution.</p> <p>Course Out Comes:</p> <ol style="list-style-type: none"> 1. They understand the pattern of inheritance in various life forms. 2. They develop strong fundamentals basics for further molecular studies.

SEMESTER-2

5	Genetics	Core Paper 201	<p>Course Objectives:</p> <p>The objective of the present course content is to provide a foundation and background in cellular and acellular entities of plants and animals, cell structure in relation to functions, eukaryotic genome structure (including nuclear and organellar), and regulatory mechanisms.</p> <p>Course Out Comes:</p> <p>The students will be learning</p> <ol style="list-style-type: none"> 1. About the acellular entities including infective particles comprising only protein or RNA, which are parasites of plants and/or animals and of the observations/proposals which challenge the established dogmas, such as, cell being the basic unit of life or higher plants are multicellular rather than supracellular, and current state of knowledge about the plant cell structure and their turn over, starting from cell wall to chromatin, in relation to their functions.
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				<p>2. Students will understand the role of plant cytoskeleton and accessory proteins in major cellular processes of plants.</p> <p>3. Student will focus on various components of the eukaryotic nuclear and organellar genome, with special reference to their regulatory role</p>
6	Molecular biology of Plants	Core 202	Paper	<p>Course Objectives: The objective of the present course content is to provide a foundation and background in cellular and acellular entities of plants and animals, cell structure in relation to functions, eukaryotic genome structure (including nuclear and organellar), and regulatory mechanisms.</p> <p>Course Out comes: The students will be learning</p> <p>1. Cell being the basic unit of life or higher plants are multicellular rather than supracellular, and current state of knowledge about the plant cell structure and their turn over, starting from cell wall to chromatin, in relation to their functions.</p> <p>2. Students will understand the role of plant cytoskeleton and accessory proteins in major cellular processes of plants.</p> <p>3. Student will focus on various components of the eukaryotic nuclear and organellar genome, with special reference to their regulatory role</p>
7	Biology and diversity of Pteridophytes and Gymnosperms	Core 203	Paper	<p>Course Objective:- The course focuses on morphology, anatomy, reproduction and evolution in Pteridophytes and Gymnosperms.</p> <p>Course Learning Outcomes:- The students develop the basic understanding of important characteristics, anatomy, reproduction and evolution along with economic importance of these two groups.</p>
8	Plant cell, tissue	Core	Paper	Course Objective:-

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	and organ culture	204		<p>The course aims at the concept, scope, instrumentation, basic requirements and applied aspects of plant tissue culture. It focuses on various types plants cultures.</p> <p>Course Learning Outcome:- Student will understand the basic properties of plant cell and with apply the their basic knowledge of PTC in various fields for conservation, medicine, product development etc.</p>
SEMESTER-3				
9	Taxonomy of angiosperms and plant resources utilization and conservation	Core 301	Paper	<p>Course Learning Outcomes: The students will be learning The students will know about the systematic position of Genera, Species, Families. The students develop knowledge about plant nomenclature. They understand the pattern origin, diversification and cultivation of plants in nature. They are able to design the stratagies for conservation of these natural resources. They become well worst with the role and functions of various organizations.</p>
10	Plant development and reproduction	Core 302	Paper	<p>Course Objectives: This course aims at making the students acquainted with the fundamentals and present understanding of the mechanisms associated with development, differentiation and structure of various plant organs, the metabolic and physiological changes occurring in them.</p> <p>Course Out Comes: Student will develop the understanding of growth, development and reproduction in plants as well as understand the physiological and metabolic changes happening along with the environmental impact.</p>
11	Plant Ecology	Core	Paper	Course Objectives:

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		303		<p>This course aims to introduce the concepts and principles of ecology, biological diversity, conservation, sustainable development, population, community and ecosystem structure and function, application of these concepts to solve environmental problems.</p> <p>Course out comes:</p> <ol style="list-style-type: none"> 1. They will understand the concept, types, development and functions of various ecosystems and their communication. 2.The various environmental factors governing these ecosystems are also clearly understood.
12	Plant Physiology	Core 304	Paper	<p>Course objectives:</p> <p>This course aims to educate student about the mechanism and physiology life processes in plants. It focuses on the plant nutrient uptake and translocation, photosynthesis, respiration and nitrogen metabolism.</p> <p>Course outcomes:</p> <ol style="list-style-type: none"> 1.Students will be able to understand the various physiological life processes in plants. 2.They will also gain about the various uptake and transport mechanisms in plants and are able to coordinate the various processes. They understand the role of various hormones, signaling compounds, thermodynamics and enzyme kinetics. During the course students will gain knowledge about various mechanisms such as channel or transport proteins involved in nutrient uptake in plants.
SEMESTER-4				
13	Genetic Engineering of plants and microbes	Core 401	Paper	<p>Course Objectives:</p> <p>This course is designed to provide a contextual and inquiry based learning of modern day advances in the field of recombinant DNA technology..</p> <p>Course Learning Outcomes:</p> <p>Students will acquire understanding of:</p>

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			<ol style="list-style-type: none"> 1. Basic principles and modern age applications of recombinant DNA technology. 2. Learning molecular and technical skills along with applications of the instrumentation. 3. Designing/conducting experiments and analysing experimental data. 4. Recombinant DNA Technology.
14	Evolution and Plant breeding	Core paper 402	Course Out Comes: <ol style="list-style-type: none"> 1. The plant breeding methodologies. 2. Applications employed for self propagated plants 3. Applications employed for cross pollinated plants. 4. Application employed for vegetatively propagated plants. 5. Evolution in plant breeding techniques.
15	Plant Pathology	Elective Paper	Course Out Comes: <ol style="list-style-type: none"> 1. Study of important taxonomic characters and symptoms produced by important microorganisms like bacteria, Fungi and Viruses. 2. Management of diseases caused by Bacteria, Fungi and Viruses. 3. Study of diseases caused by abiotic factors. 4. To impart plant disease management by different methods
16	Crop physiology and Biotechnology	Elective Paper	Course Objectives: This course would provide students with an understanding of principles and techniques of plant tissue culture, concepts and methods associated with development and analysis of transgenic plants, and their applications in basic and applied research. Course Learning Outcomes: The students will learn about <ol style="list-style-type: none"> 1. Concepts, tools and techniques related



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1. Different methods used for genetic transformation of plants use of Agrobacterium as a vector for plant transformation components of a binary vector system.				
2. Various case studies related to basic and applied research in plant science using transgenic technology.				
3. Principles and methods used for phenotypic, genetic and molecular analysis of transgenic plants.				

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			<p>to <i>in vitro</i> propagation of plants.</p> <p>2. Different methods used for genetic transformation of plants, use of <i>Agrobacterium</i> as a vector for plant transformation, components of a binary vector system.</p> <p>3. Various case studies related to basic and applied research in plant sciences using transgenic technology.</p> <p>4. Principles and methods used for phenotypic, genetic and molecular analysis of transgenic plants.</p>
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