

M.V.R. DEGREE COLLEGE
(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 Biotechnology
Bachelor of Science (B.Sc, MBBCBT, CBCBT, BCBTHG,)
APSCHE, Revised Syllabus of Biotechnology under CBCS Framework
w.e.f.2020-21 (revised in April 2020)
Course outcomes(COs) for Biotechnology

Code	Title of the paper	Outcomes
COURSE 101 (TH)	BIOMOLECULES AND ANALYTICAL TECHNIQUES	<p>CO1: To acquire knowledge on the principle basic concepts ,instrumentation , application ,types of spectrophotometry are studied and this knowledge is applied for estimation of biomolecules like DNA .proteins ,coloured solutions etc., .</p> <p>CO2: To learn about the principle ,mechanism, equipment and applications of separation of biomolecules,pigments etc...,. This knowledge is useful in isolating certain molecules in pure form .</p> <p>CO3: To learn about isotopic tracer techniques-how to calculate the measurement of radioactivity, different principle, advantages of instrumentation techniques of TLC, ionic exchange and affinity chromatography etc.,.</p> <p>CO4:To learn the basic principles ,concept and types of centrifuges to isolate cell components and determine molecular weight by sedimentation methods.</p> <p>CO5 :They can also learn about the design and types of spectrophotometer, Electrophoresis and microscopes.</p>
COURSE 101 (PR)	BIOMOLECULES AND ANALYTICAL TECHNIQUES	<p>CO1:Able to learn about molarity ,normality and molecular Hence ht of compounds.In which molarity can also be used to calculate the volume of solvent or amount of solute and normality is used to measure no.of ions in the given reaction.Hence normality offers more depth understanding of the solution concentration in acid-base reaction.</p> <p>CO2:Able to estimate DNA and RNA where DNA provides the code for the cell's activities,while RNA converts the code into proteins to carry out cellular function.</p>



M.V.R. DEGREE COLLEGE
(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

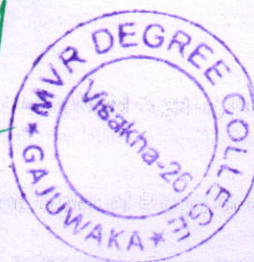
		<p>CO3:To have knowledge about chromatography and Electrophoretic techniques.</p> <p>CO4:They can also learn about how to apply different isotopes in biotechnology.</p>
COURSE 201 (TH)	MICROBIOLOGY, CELL AND MOLECULAR BIOLOGY	<p>CO1: Achieve comprehensive list of microbial diversity.Behold in interchangeable modes of bacterial classification.Verstile Knowledge in Bergey's manual of Classification.</p> <p>CO2: Handle the Septic and unhygienic conditions with a variety of sterilization techniques. Can be hold of different kinds of organic</p> <p>CO3: Strong intention will be developed in culturing various microorganisms.Be hold in identification of bacteria by various staining techniques.Able to enumerate the growth phase and development,learn the importance of batch and continuous culture systems.</p> <p>CO4: Understand the significance of Pure culture in relation to produce economized products.Realized to know the importance of viral classification and structure in relation to pathogenicity. Thorough knowledge and replication of viruses and generation capacity of viral particles in an array of hosts.</p> <p>CO5 : Able to recognize and understand various proteins that associate the genome . look up through various models of replication in both prokaryote and eukaryotes organisms.</p>
COURSE 201(PR)	MICROBIOLOGY, CELL AND MOLECULAR BIOLOGY	<p>CO1: Able to attain knowledge in inspection of various microbial forms. Catch up the expertise in equipments related to sterilisation. Know the importance of media in enumerating microbial forms can get the proficiency in identification of various microbial forms by culture methods and staining methods.</p> <p>CO2: Hands on expertise in qualitative testing of water and milk .Be skilled in isolation of genetic material from various sources.</p> <p>CO3:Bring about expertise in evaluation of phosphorous content in genetic materials.Able to design a valid protocol for isolation of chromosomal and plasmid DNA in bacterial.</p>

M.V.R. DEGREE COLLEGE
(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

		CO4:Capable to assess the quantitative fraction of genetic material by exclusive reagents.
COURSE 301 (TH)	IMMUNOLOGY AND r-DNA TECHNOLOGY	<p>CO1:To learn about the basic mechanism distinctions and functional interplay of innate and adaptive immunity and the cellular /molecular pathways of humoral cell mediated adaptive responses.</p> <p>CO2:To learn about structure ,classess,types of antibody&antigens and factors affecting antigenicity.To understand how disease causing microorganism can be used as a weapon to fight against the same microorganism.</p> <p>CO3:To get better understanding about vaccination,blood transfusion,grafting etc.To gain knowledge that helps to take up reseach to find medicines for present incurable diseases.</p> <p>CO4:To learn about the tools of genetic engineering which helps to produce new variety of product through r-dna technology. To know types of intellectual property, international organization and their functions.</p> <p>CO5:To gain knowledge about PCR and blotting techniques these powerful techniques allow the researches to identify & characterize specific molecules in a complex mixture of related molecules.To learn about biological databases and Matrices.</p>
COURSE 301 (PR)	IMMUNOLOGY AND r-DNA TECHNOLOGY	<p>CO1:To gain knowledge about lymphoid organs, production of antibodies, PCR and Blotting techniques.</p> <p>CO2:To learn how to determine types of Blood Groups.</p> <p>CO3: To learn about the Basic principles of Gene cloning and DNA analysis.</p> <p>CO4: To learn about production of antibodies and their titration used to eliminate antigens or pathogens.</p>



M.V.R. DEGREE COLLEGE
(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

<p>COURSE 401(i) (TH)</p>	<p>PLANT AND ANIMAL BIOTECHNOLOGY</p>	<p>CO1:To learn about ecology ,various ecosystems ,Bio-geochemical cycles .to learn about pollutants ,maintenance of standard biological indicators .</p> <p>CO2: To learn about biocides ,waste disposal –effluent treatment methods. To idea about bioremediation,GM microbes in the environmental management .</p> <p>CO3:To learn about important microorganisms, various medium and innoculum preparation.To have knowledge on types of bioreactors,analysis of varioustypes of bioreactors.</p> <p>CO4: To have knowledge about fermentation,production of citric acid by fermentation.To acquire knowledge about various recombinant proteins having therapeutic and diagnostic applications.</p> <p>CO5:To have knowledge about production of enzymes and antibiotics like pencillin . To gain knowledge about production of recombinant protiens like Insulin.</p>
<p>COURSE 401 (i)(PR)</p>	<p>PLANT AND ANIMAL BIOTECHNOLOGY</p>	<p>CO1:Able to determine hardness and alkalinity of water.</p> <p>CO2: Able to learn about titrimetry .</p> <p>CO3:be skilled in isolation of industrially important microorganisms from soil.</p> <p>CO4:To have knowledge in production of alcohol and wine .</p>

M.V.R. DEGREE COLLEGE
(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

COURSE 401 (ii) (TH)	ENVIRONMENTAL & INDUSTRIAL BIOTECHNOLGY	<p>CO1: To acquire knowledge about the Environmental Pollution, types of pollution, Bio trickling filters. Water pollution and its management, Microbiology of waste water treatment.</p> <p>CO2: To have knowledge about Bio Remediation, Bio Degradation – concepts and principles.</p> <p>CO3: To know about the Bio fuels – biogas microbial groups involved in biogas production, factors affecting biogas production, bio fertilizers, vermiculture.</p> <p>CO4: To know about the basic principles of Microbial technology.</p> <p>CO5: To acquire knowledge about the commercial production of Microbial products- Lactic acid, Citric acid.</p>
COURSE 401 (ii) (PR)	ENVIRONMENTAL & INDUSTRIAL BIOTECHNOLGY	<p>CO1: Able to determine the waste water treatment.</p> <p>CO2: To understand about the biodegradational and bio remedial.</p> <p>CO3: To understand the Biogas production and isolate the bio fertilizers.</p> <p>CO4: Design of Fermenter and applications.</p> <p>CO5: To understand the commercial production of Microbial products.</p>

Attested
[Signature]

PRINCIPAL
M.V.R. DEGREE COLLEGE
Shramika Nagar, Gajuwaka,
VISAKHAPATNAM - 530 026

