

### Course Outcome (Theory and Practical)

Course Title	<b>BTP 102 – CELL BIOLOGY AND GENETICS Practical</b>	
CO.Nos	Course Outcome	PSOs
CO1	Students will learn the principles and operation of Microscopy	PSO2
CO2	Students will be able to measure the cell size using micrometry	PSO4
CO3	Students will analyse cell division by performing mitosis and meiosis	PSO3
CO4	Students will comprehend the staining techniques in cell biology	PSO1
CO5	Students will learn about the principle and operation of haemocytometer	PSO5

Course Title	<b>BTT 201- GENERAL MICROBIOLOGY AND BIOSTATISTICS</b>	
CO.Nos	Course Outcome	PSO
<b>Theory</b>		
CO1	Students will learn the complete part of Introduction and Scope of Microbiology	PSO2
CO2	Students will learn the STERILIZATION: Principles and applications of physical, and chemical methods	PSO4
CO3	Students will learn about the Concepts of Microbial species and strains, Classification of bacteria based on Morphology (Shape and flagella), Staining reaction, nutrition and extreme environment	PSO3

CO4	Students will learn about Tabulation and classification of data, Frequency distribution and Graphical distribution of data	PSO1
CO5	Students will be able to learn and solve Concepts and problems on probability, Binomial, Poisson, Normal Distribution and their applications	PSO5

<b>Course Title</b>	<b>BTP 202- GENERAL MICROBIOLOGY AND BIostatISTICS</b>	
	<b>Practical</b>	
<b>CO.Nos</b>	<b>Course Outcome</b>	<b>PSO</b>
CO1	Students will be trained with Safety measures in microbiology laboratory	PSO2
CO2	Students will be explained the methods of Cleaning and sterilizin glass wares	PSO4
CO3	Students will be able to perform Staining Techniques: Simple, Negative staining, Gram staining, Endospore staining fungal Staining, Bacterial mobility by hanging drop method.	PSO3
CO4	Students will be able to prepare media: Nutrient agar, MRBA and Nutrient broth.	PSO1
CO5	Students will be able to Isolate bacteria and fungi from soil, air, and water- dilution and pour plate methods	PSO5

<b>Course Title</b>	<b>BTT 301- BIOCHEMISTRY AND BIOPHYSICS</b>	
	<b>Theory</b>	
<b>CO.Nos</b>	<b>Course Outcome</b>	<b>PSO</b>

CO1	To understand the classification and properties of amino acids	PSO2
CO2	To understand the classification, structure and functions, structural organization of proteins	PSO4
CO3	To understand the basic concept of enzymes	PSO3
CO4	To understand the basic concept of carbohydrates.	PSO1
CO5	To understand basic concept of lipids.	PSO5

<b>Course Title</b>	<b>BTP 302- BIOCHEMISTRY AND BIOPHYSICS practical</b>	
<b>CO.Nos</b>	<b>Course Outcome</b>	<b>PSO</b>
CO1	Students will be able to Prepare Buffers-Citrate and Phosphate.	PSO2
CO2	Students will be able to Estimate reducing sugars (Glucose, Maltose and Lactose) by DNS and Somoji's Methods.	PSO4
CO3	Students will be able to Estimate Protein by Biuret method and Lowry's method	PSO3
CO4	Students will be able to Separate Sugars by TLC.	PSO1
CO5	Students will be able to Estimate Amino acids by ninhydrin method	PSO5

<b>Course Title</b>	<b>BTT 401- Molecular Biology Theory</b>	
<b>CO.Nos</b>	<b>Course Outcome</b>	<b>PSO</b>
CO1	To understand molecular basis of life	PSO2
CO2	To understand the structure and functions of nucleic acids	PSO4
CO3	To understand the DNA replication and its methods	PSO3
CO4	To enable them to understand the mechanism of DNA repair	PSO1
CO5	To understand recombination in prokaryotes	PSO5

<b>Course Title</b>	<b>BTP 402- Molecular Biology Practical</b>	
<b>CO.Nos</b>	<b>Course Outcome</b>	<b>PSO</b>
CO1	Students will be able to Prepare DNA model	PSO2
CO2	Students will be able to estimate DNA by DPA method.	PSO4
CO3	Students will be able to estimate RNA by Orcinol method	PSO3
CO4	Students will be able to perform Column chromatography – gel filtration (Demo)	PSO1
CO5	Students will be able to separate protein by Polyacrylamide Gel Electrophoresis (PAGE)	PSO5

<b>Course Title</b>	<b>BTT 501- Genetic Engineering And Environmental Biotechnology</b>	
	<b>Theory</b>	
<b>CO.Nos</b>	<b>Course Outcome</b>	<b>PSO</b>
CO1	To know the scope, milestone and importance of genetic engineering.	PSO2
CO2	To study in detail about tools used in genetic engineering such as molecular scissors and sutures, vectors.	PSO4
CO3	To understand the steps involved in construction of recombinant DNA.	PSO3
CO4	To learn different transformation techniques used for the production of recombinant DNA	PSO1
CO5	To understand the methods of screening and selection of recombinant cells.	PSO5

<b>Course Title</b>	<b>BTP 502- Genetic Engineering And Environmental Biotechnology</b>	
	<b>Practical</b>	
<b>CO.Nos</b>	<b>Course Outcome</b>	<b>PSO</b>
CO1	DNA isolation from various sources and know the roles of various reagent	PSO2
CO2	students will know how to analyse DNA in gel	PSO4
CO3	Know different tools in Genetic engineering	PSO3
CO4	Testing of water quality	PSO1
CO5	Know about mycorrhizal association with plant	PSO5

<b>Course Title</b>	<b>BTT 503- Immunology And Animal Biotechnology</b>	
	<b>Theory</b>	
<b>CO.Nos</b>	<b>Course Outcome</b>	<b>PSO</b>
CO1	To know the milestone and scope of immunology	PSO2
CO2	To understand the concept of passive, active, humoral and cell mediated immunity.	PSO4
CO3	To understand the role of cells and organs of immune response	PSO3
CO4	To study the structure, types, properties, function and production of antibodies or immunoglobulins	PSO1
CO5	To understand the structure, components, properties and function of the complement system in evoking immune response.	PSO5

<b>Course Title</b>	<b>BTP 504- Immunology And Animal Biotechnology</b>	
	<b>Practical</b>	
<b>CO.Nos</b>	<b>Course Outcome</b>	<b>PSO</b>
CO1	Understand various types of cancer, tumor invasion, markers in cancer research and diagnosis	PSO2
CO2	Demonstrate antigen-antibody relationships and their detection methods.	PSO4
CO3	Testing of water quality	PSO3

CO4	Know about mycorrhizal association with plant	PSO1
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<b>Course Title</b>	<b>BTT 601- Plant Biotechnology</b>	
	<b>Theory</b>	
<b>CO.Nos</b>	<b>Course Outcome</b>	<b>PSO</b>
CO1	To understand the in-vitro methods in plant tissue culture, Aseptic Techniques, Nutrient media, and use of growth regulators.	PSO2
CO2	To learn In-vitro fertilization-Ovary and Ovule culture.	PSO4
CO3	To understand Clonal propagation of elite species	PSO3
CO4	To understand Protoplast Culture-Isolation, practical application of somatic hybridization and hybridization	PSO1
CO5	To understand In-vitro production of secondary metabolites-Techniques and significance	PSO5

<b>Course Title</b>	<b>BTP 602- Plant Biotechnology</b>	
	<b>Practical</b>	
<b>CO.Nos</b>	<b>Course Outcome</b>	<b>PSO</b>
CO1	Upon completion of the course, the student shall be able to understand: The basic concepts of ecology	PSO2
CO2	Upon completion of the course, the student shall be able to understand: Microbial association and functions.	PSO4

CO3	Upon completion of the course, the student shall be able to understand: Gene concept and organization and their implications	PSO3
CO4	Upon completion of the course, the student shall be able to understand: To understand In-vitro production of secondary metabolites-Techniques and significance	PSO1

<b>Course Title</b>	<b>BTT 603- Industrial Biotechnology</b>	
	<b>Theory</b>	
<b>CO.Nos</b>	<b>Course Outcome</b>	<b>PSO</b>
CO1	To know the scope and importance of industrial biotechnology and basic principles of fermentation technology.	PSO2
CO2	To learn the technique of screening and isolation of industrially important microorganisms and the methods of strain improvement.	PSO4
CO3	To learn the technique of screening and isolation of industrially important microorganisms and the methods of strain improvement.	PSO3
CO4	To study in detail about designing bioreactors and their types and applications.	PSO1
CO5	To understand Different types of fermentation methods. Immobilization technique and application of immobilized enzymes and cells	PSO5



<b>Course Title</b>	<b>BTP 604- Industrial Biotechnology Practical</b>	
<b>CO.Nos</b>	<b>Course Outcome</b>	<b>PSO</b>
CO1	The objectives of this course are to introduce students to developments/ advances made in field of microbial technology for use in human welfare and solving problems of the society.	PSO2
CO2	On completion of this course, students would develop deeper understanding of the industrial Biotechnology and its applications	PSO4
CO3	Upon completion of the course, the student shall be able to understand: To learn the technique of screening and isolation of industrially important microorganisms and the methods of strain improvement.	PSO3
CO4	Upon completion of the course, the student shall be able to understand: To study in detail about designing bioreactors and their types and applications.	PSO1