M.Sc. Microbiology

PROGRAMME OUTCOME (PO) OF M.Sc., MIROBIOLOGY PROGRAMME

3.0 Expected Program Outcome

PO.No	Upon completion of M.Sc., Microbiology Programme, the graduates will be able to:
PO1	Equip with a sound knowledge of the fundamental principles involved in the study of Microbiology.
PO2	Create an impact in the diverse fields of human endeavor considering the ubiquitous nature of microorganism and the wide–ranging applications of Microbiology.
PO3	Carrier a career in various fields of Applied Science including Medicine, Pharmacy, Mining, Biotechnology, Industrial Production, Environmental Management, Agriculture and Computer industry.
PO4	Illustrate important milestones and prepare for a wide variety of career paths.
PO5	Examine the background of microbiology relevant to the chosen specific research area, create an opportunity to develop skills in framing and testing hypotheses, in developing new findings and planning the structure of the research.

4.0 Program Specific Outcomes

PSO. No	Upon completion of M.Sc. Microbiology Degree program, the Postgraduates will be able to:	Mapping
PSO1	Understand and acquire advanced level information in the subjectof Microbiology and study the vast array of microbes to their diversity, structure and influence on the world	PO1, PO3
PSO2	Impart knowledge to recent techniques in Microbiology and Provide students with the basic laboratory skills required for a career either applied or research Microbiology.	PO3, PO5
PSO3	Compile the CSIR, NET, SET and other Service examination materials for Microbiology.	PO4, PO1
PSO4	Identify different processes used in Industries and Clinical Laboratories.	PO3, PO4
PSO5	Relate to various recent emerging areas ofMicrobiology.	PO2, PO5
PSO6	Acquire the knowledge to analyze the Quality laboratory Managementethical issues regarding modern biology	PO5, PO1

SEMESTER-I			
DSC 1	**GENERAL MICROBIOLOGY AND BACTERIOLOGY**		**18PCMB11**
Hrs/Week:6	**Hrs/Sem: 90**	**Hrs/Unit: 18**	**Credits:4**

CO. No	Upon the completetion of the course, Postgraduates will be able to:	PSO Mapped	Blooms Taxonomy Classification
CO1	Analyze the fundamental concepts of Microbial World.	PSO1	Analyzing
CO2	Infer the Modern trends in the classification of Microbes.	PSO3	Understanding
CO3	Find the Morphology and Ultra structure of Bacteria.	PSO1	Remembering
CO4	Identify the Nutritional types of bacteria, Growth Kinetics of different bacteria.	PSO4	Applying
CO5	List out thegeneral characters and classification of Archae and Eubacteria.	PSO4	Remembering
CO6	Explain the Characteristics of *Cyanobacteria.*	PSO2	Understanding

SEMESTER-I			
DSC 2	**TECHNIQUES IN MICROBIOLOGY**		**18PCMB12**
Hrs/Week:6	**Hrs/Sem: 6x15= 90**	**Hrs/Unit: 18**	**Credits:4**

CO.No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Apply the fundamental concepts of different types of Microscope.	PSO1	Understanding
CO2	List out the principle and methods of Sterilization.	PSO2	Remembering
CO3	Apply the basic principles and methods of media preparation.	PSO5	Applying
CO4	Evaluate the unknown compound by usingChromatography and Spectrophotometry.	PSO4	Evaluating
CO5	Analyze and quantify the Biomolecules byElectrophoresis method.	PSO4	Analyzing
CO6	Determine the structure of protein and DNA by Gel Electrophoresis.	PSO1	Evaluating

SEMESTER-I			
DSC 3	**MICROBIAL BIOCHEMISTRY**		**18PCMB13**
Hrs/Week:6	**Hrs/Sem: 6x15= 90**	**Hrs/Unit: 18**	**Credits:4**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Classify the fundamental concepts of Biomolecules such as Proteins, Lipids, and Nucleic acid.	PSO1	Understanding
CO2	Evaluate structure, classification and function of lipids.	PSO3	Evaluating
CO3	Categorize the Peptide bond, Formation and its types.	PSO3	Analyzing
CO4	Explain the structure of Nucleosides, Nucleotides.	PSO2	Evaluating
CO5	Examine and determine MichaelisMenton Constant.	PSO4	Analyzing
CO6	Apply theory on Lock and Key Model.	PSO5	Applying

SEMESTER-I			
DSE 1A	**QUALITY ASSURANCE IN MICROBIOLOGY**		**18PEMB1A**
Hrs/Week:4 **Credits:4**	**Hrs/Sem: 4x15= 60**	**Hrs/Unit: 12**	

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Analyze and acquire management skills in laboratory hazards.	PSO1	Analyzing
CO2	Design a Microbiological Laboratory.	PSO1	Creating
CO3	Illustrate quality assessment of the equipments, chemicals, glasswares and Laboratory environment.	PSO1	Understanding
CO4	Discuss Preservation of stock cultures,media and diagnostic kits.	PSO3	Creating
CO5	List the Quality assessment of disposal, decontaminated matters and other biological effluents.	PSO4	Analyzing, Remembering

SEMESTER-I			
DSE 1B	**MEDICAL LABORATORY TECHNOLOGY**		**18PEMB1B**
Hrs/Week:4	**Hrs/Sem: 4x15= 60**	**Hrs/Unit: 12**	**Credits:4**

Co. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Analyze normal composition of blood – Routine Examination of Blood.	PSO1	Analyzing
CO2	Analyze the Immunohaematology and its Immunological reactions.	PSO1	Analyzing
CO3	Determine the physical and microscopic examination of Urine.	PSO3	Evaluating
CO4	Assess the sperm count, motility and Morphology.	PSO3	Evaluating
CO5	Choose the expressive use of General Inflammatory markers-CRP, RA, ASO.	PSO3	Remembering
CO6	Explain the collection of various clinical samples.	PSO2	Understanding and Evaluating

SEMESTER-I			
DSCP I	**TECHNIQUES IN MICROBIOLOGY**		**18PCMB1P1**
Hrs/Week:4	**Hrs/Sem: 4x15= 60**	**Hrs/Unit: 12**	**Credits:2**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addresed	Blooms Taxonomy Classification
CO1	Find out the unknown microorganisms from different types samples.	PSO 1	Remembering
CO2	Demonstrate the isolation of microbes, counting of microbial cell, staining process and identification of Microorganisms.	PSO3	Understating
CO3	Discuss theconcepts of cultivation and morphology of molds – Lacto phenol cotton blue staining.	PSO4	Creating
CO4	Evaluate the different techniques of pure culture.	PSO5	Evaluating
CO5	Determine the counting of microbial cells using haemocytometer.	PSO2	Evaluating

SEMESTER-I			
DSCP -II	**TECHNIQUES IN BACTERIOLOGY & BIOCHEMISTRY**		**18PCMB1P2**
Hrs/Week:4	**Hrs/Sem: 4x15= 60**	**Hrs/Unit: 12**	**Credits:2**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Identify the microorganisms based on their morphological and biochemcial reaction.	PSO2	Applying
CO2	Examine Dry weight of bacteria, Protein, Lipids.	PSO2	Analyzing
CO3	Estimate the Protein level by Lowry's Method.	PSO3	Creating
CO4	Estimate the sugar levels by using Anthrone Method.	PSO3	Creating
CO5	Illustrate the techniques in separation of amino acid by paper and thin chromatography.	PSO3	Understating
CO6	Identify the separation of compounds in leaf crude extract by thin layer chromatography.	PSO3	Applying
CO7	List out the methods in Biochemical tests for blood Glucoseand Urea.	PSO1	Analyzing

SEMESTER-II			
DSC 4	**VIROLOGY**		**18PCMB21**
Hrs/Week:5	**Hrs/Sem: 6x15= 90**	**Hrs/Unit: 18**	**Credits:4**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Classify the structure of the Structure, Replication and Growth kinetics of phages.	PSO1	Understanding
CO2	Distinguish the animal viruses and plant viruses.	PSO2	Analyzing
CO3	Analyze the quantitative assay and immunodiagnosis of virus.	PSO3	Analyzing
CO4	Demonstrate the Cultivation of viruses – Isolation and Purification of Viruses.	PSO3	Understanding
CO5	Construct the exceptional skills and training in Characterization and Enumeration of viruses.	PSO5	Applying
CO6	Elaborate the replication of Bacteriophage.	PSO5	Creating

SEMESTER-II			
DSC5	**MICROBIAL PHYSIOLOGY and METABOLISM**		**18PCMB22**
Hrs/Week:5	**Hrs/Sem: 6x15= 90**	**Hrs/Unit: 18**	**Credits:4**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Find the nutritional types, mode of intake of nutrients and metabolic activity of Microorganisms.	PSO2	Remembering
CO2	Define the study of Photosynthetic yield and Photorespiration.	PSO3	Remembering
CO3	Recall various theories on microbial metabolismand pathways.	PSO1	Remembering
CO4	Discuss the biosynthesis of purines andpyrimidines.	PSO5	Creating
CO5	Elaborate the electron transport chain.	PSO5	Creating
CO6	Outline various steps involved in Nitrogen Fixation.	PSO4	Understanding

SEMESTER-II			
DSC6	**MOLECULAR BIOLOGY and GENETIC ENGINEERING**		**18PCMB23**
Hrs/Week:5	**Hrs/Sem: 6x15= 90**	**Hrs/Unit: 18**	**Credits:4**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Distinguish the prokaryotic and Eukaryotic DNA replication.	PSO3	Analyzing
CO2	Summarize the field of molecular biology and genetic engineering.	PSO1	Understanding
CO3	List out the informations about Gene and operon concept.	PSO1	Remembering and Analyzing
CO4	Summarize the role of enzymes in Genetic engineering.	PSO4	Understanding
CO5	Prove DNA as Genetic Material by experimental evidences.	PSO2	Evaluating
CO6	Outline various steps involved in Nitrogen fixation.	PSO2	Understanding

SEMESTER-II			
DSE2A	**AGRICULTURAL MICROBIOLOGY**		**18PCMB2A**
Hrs/Week:4	**Hrs/Sem: 4x15= 60**	**Hrs/Unit: 12**	**Credits:4**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Understand the Soil and Nature medium for Plant growth.	PSO1	Understanding
CO2	Explain the different type of Mycorrhizae.	PSO1	Understanding
CO3	Demonstrate methods for mass production of Biofertilizer	PSO6	Understanding
CO4	Developskills in the Management of Plant diseases.	PSO4	Creating
CO5	Classify different types of Bacterial and Fungal Insecticides.	PSO1	Analyzing
CO6	Outline different types of bacterial diseases in plants.	PSO1	Understanding

SEMESTER-II			
DSE2B	**NANOBIOTECHNOLOGY**		**18PCMB2B**
Hrs/Week:4	**Hrs/Sem: 4x15= 60**	**Hrs/Unit: 12**	
Credits:4			

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Analyzethe important role of nanotechnology.	PSO5	Analyzing
CO2	Elaborate the nanowire, nanotubes, nanocomposite, nanoshell, quantum dots.	PSO6	Creating
CO3	Examine the biological synthesis of nanoparticles preparation using microorganism.	PSO3	Analyzing
CO4	Evaluate the different chemical methods for the synthesis of nano particles.	PSO1	Evaluating
CO5	Explain the concepts of nanomedicine, biomedical sensor, bioimaging.	PSO2	Understanding
C06	Develop cancer therapy by using nano medicine.	PSO2	Applying

SEMESTER-II			
IDC-1	**MICROBIOLOGY AND HUMAN HEALTH**		**18PIMB21**
Hrs/Week:3	**Hrs/Sem: 3x15= 45**	**Hrs/Unit: 9**	**Credits:3**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Understand the theory of microbial origin and their preventive and control measures.	PSO3	Understanding
CO2	Analyze different types of human diseases caused by bacteria.	PSO5	Analyzing
CO3	Summarize the origin of human diseases.	PSO1	Understanding
CO4	Demonstrate the Systemic mycoses, Opportunistic mycoses and Antifungal agents.	PSO4	Understanding
CO5	Evaluate and explore the important human Protozovaldiseases, prevention and control.	PSO5	Evaluating

SEMESTER-II			
P III	**TECHNIQUES IN VIROLOGY, AND MICROBIAL PHYSIOLOGY,**		**18PCMB2P1**
Hrs/Week:4	**Hrs/Sem: 4x15= 60**	**Hrs/Unit: 12**	**Credits:2**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Develop specialized knowledge of Phage titration.	PSO1	Applying
CO2	Analyze various stages of Bacterial Growth curve.	PSO3	Analyzing
CO3	Compile and understand the biochemical test.	PSO5	Creating
CO4	Utilize the various Carbohydrate sources.	PSO2	Understanding
CO5	Determine the production of Enzymes using various hydrolysis.	PSO1	Evaluating

SEMESTER-II		
P IV	**TECHNIQUES IN MOLECULAR BIOLOGY AND GENETIC ENGINEERING**	**18PEMB2P1**
Hrs/Week:4	**Hrs/Sem: 4x15= 60 Hrs/Unit: 12**	**Credits:2**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Test the Isolation of Chromosomal DNA from *E.coli*.	PSO2	Creating
CO2	Estimate theNucleic acid.	PSO6	Evaluating
CO3	Determine the separation of Protein byusing SDSPAGE.	PSO3	Evaluating
CO4	Analyze the Restriction Enzyme digestion of DNA.	PSO5	Analyzing
CO5	Relate the Conjugation and Transformation of genetic material.	PSO1	Understanding

SEMESTER-III		
DSC 7	**MEDICAL MICROBIOLOGY**	**18PCMB31**
Hrs/Week:5	**Hrs/Sem: 6x15= 90 Hrs/Unit: 18**	**Credits:4**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Summarize the role of normal flora in human body.	PSO1	Understanding
CO2	Distinguish various clinically important bacteria and its mode of infection.	PSO3	Analyzing
CO3	Relate the comprehensive theoretical knowledge of pathogenic viruses.	PSO2	Understanding
CO4	Categorize and distinguish the different causative agents of the infectious diseases.	PSO6	Analyzing
C05	Explain the Epidemiology and lab diagnosis treatment prevention of Protozoa.	PSO1	Evaluating

SEMESTER-III			
DSC 8	**IMMUNOLOGY**		**18PCMB32**
Hrs/Week:5	**Hrs/Sem: 6x15= 90**	**Hrs/Unit: 18**	**Credits:4**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Classify the physical, chemical and physiological characteristics of the components of the immune system.	PSO1	Understanding
CO2	Demonstrate the individual components of the immune system. Work together to fight bacterial, fungal, or viral infections.	PSO3	Understanding
CO3	Understand the essential elements of the immunization and immune disorder.	PSO6	Applying
CO4	Summarize the different types of complement pathway.	PS05	Understanding
CO5	Outline the important serological test.	PSO5	Understanding

SEMESTER-III			
DSC9	**BIOINFORMATICS AND BIOSTATISTICS**		**18PCMB33**
Hrs/Week:5	**Hrs/Sem: 6x15= 90**	**Hrs/Unit: 18**	**Credits:4**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Demonstrate the significance of biological data.	PSO2	Understanding
CO2	Buildan in-depth knowledge of different databases related to bioinformatics.	PSO1	Applying
C03	Analyse the different types of sequence alignment tools in bioinformatics.	PS02	Analysing
CO4	List out theapplication of statistical methods to the solution of problems encountered in public health and medicine.	PSO5	Remembering
CO5	Evaluate the various statistical methodology.	PSO6	Evaluating

SEMESTER-III			
DSE 3A	**PHARMACEUTICAL MICROBIOLOGY**		**18PEMB3A**
Hrs/Week:4	**Hrs/Sem: 4x15=60**	**Hrs/Unit: 12**	**Credits:4**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Outline the microbiological assay of pharmaceutical products.	PSO1	Understanding
CO2	Analyse the different methods of microbial assays (HPLC,RPC,IPC).	PSO3	Analyzing
CO3	Outline the sterility testing of pharmaceutical products.	PSO1	Understanding
CO4	Developand classify the different types of vaccine production.	PSO6	Applying
C05	Define the action of antibiotics in humans.	PS02	Remembering

SEMESTER-III			
DSE 3B	**BIOTECHNOLOGY**		**18PEMB3B**
Hrs/Week:4	**Hrs/Sem: 4x15=60**	**Hrs/Unit: 12**	**Credits:4**

CO.No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Explain the scope and importance of biotechnology.	PSO1	Understanding
CO2	Demonstrate the structure of nucleotides and nucleosides.	PSO2	Understanding
CO3	Outline the plant tissue culture methods.	PSO6	Understanding
CO4	Demonstrate the animal cell culture method, tissue engineering and transgenic animals.	PSO4	Applying
C05	Develop a biotechnological methods to measure various pollution parameters.	PSO1	Applying

IDC-2	ENTREPRENEURSHIP IN MICROBIOLOGY		18PIMB31
Hrs/Week:3	Hrs/Sem: 3x15= 45	Hrs/Unit: 9	Credits:3

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Analyse the skills for entrepreneurs and finance management.	PSO2	Evaluating
CO2	Determine the production of fermented dairy products.	PSO1	Evaluating
CO3	Compare different types of biofertilizer and bioinsecticides.	PSO4	Analyzing
CO4	Find the products from Marine resources like sea weed, sea grass, coral reefs.	PSO6	Remembering
C05	Categorize the financial support for Bio entrepreneurs.	PS06	Analyzing

SEMESTER-III			
P V	TECHNIQUES IN MEDICAL MICROBIOLOGY		18PCMB3P1
Hrs/Week:4	Hrs/Sem: 4x15= 60	Hrs/Unit: 12	Credits:2

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Explain the methods on medical microbiology.	PSO2	Understanding
CO2	Recall the isolation and identification of clinically important pathogens.	PSO4	Remembering
CO3	Analyse the antibacterial sensitivity test by using disc and well diffusion methods.	PSO5	Analyzing
CO4	Evaluate the fungal pathogen from dandruff.	PSO6	Evaluating
CO5	Determine the minimum inhibitory concentration of antibiotics.	PS02	Evaluating

SEMESTER-III		
DSCP VI	**TECHNIQUES IN IMMUNOLOGY, BIOINFORMATICS AND BIOSTATISTICS**	**18PCMB3P2**
Hrs/Week:4	**Hrs/Sem: 4x15= 60** **Hrs/Unit: 12**	**Credits:2**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Understand various test of immunology.	PSO1	Analyzing
C02	Interpret the applications of assays in the diagnosis of microbial diseases.	PSO4	Creating
C03	Apply knowledge in various blotting types.	PSO2	Applying
CO4	Develop the practical skillin blast and NCBI resources.	PSO6	Applying
CO5	Determine the various steps in statistical tools (ANOVA) in biostatistics.	PS02	Evaluating

SEMESTER-IV		
DSC 10	**FOOD MICROBIOLOGY**	**18PCMB41**
Hrs/Week:5 **Credits:4**	**Hrs/Sem: 6x15= 90**	**Hrs/Unit: 18**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Inferthe detailed information about factors affecting the growth and survival of microorganisms in food.	PSO1	Understanding
CO2	Create an awareness of spoilage of different food products.	PSO4	Creating
CO3	Analyze different food preservation techniques.	PSO5	Analyzing
CO4	Create awareness on food borne disease.	PSO6	Creating
C05	Make use of food safety measurement for the quality of food stuffs.	PSO6	Applying

SEMESTER-IV			
DSC 11	**INDUSTRIAL MICROBIOLOGY**		**18PCMB42**
Hrs/Week:5	**Hrs/Sem: 6x15= 90**	**Hrs/Unit: 18**	**Credits:4**

CO. No	Upon the completetion of the course,the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Determine the factors affecting the growth kinetics of microorganisms.	PSO2	Evaluating
CO2	Compare the design and types of various bioreactors.	PS04	Understanding
CO3	Analyze the Microbial production of enzymes, solvents and acids.	PSO5	Analyzing
CO4	Make use of microorganisms in the production of biopolymers and biofuel.	PSO1	Applying
CO5	Design successful metagenomics projects, its scope and applications.	PSO6	Creating

SEMESTER-IV		
DSC 12	**PROJECT**	**18PCMB43**
Hrs/Week:8	**Hrs/Sem: 6x15= 90**	
Credits:8		

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Formulate the advanced levelof information for doing a research project individually.	PSO4	Creating
CO2	Develop self-confidence through paper presentation and skills based training at workshops and get acquainted to subject interviews.	PSO5	Applying
CO3	Analyzethe skills in writing research papers.	PSO1	Analyzing
CO4	Develop competence in research design and planning.	PSO6	Applying
CO5	Make use of project study to approach funding agency.	PSO5	Applying

SEMESTER-IV		
DSE 4A VERMI TECHNOLOGY and MUSHROOM CULTIVATION		**18PEMB4A**
Hrs/Week:4	**Hrs/Sem: 4x15= 60** **Hrs/Unit: 12**	**Credits:4**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Discover knowledge on vermi composting and mushroom cultivation forEntrepreneurship.	PSO1	Analyzing
CO2	Apply theirskills in the techniques of vermicomposting.	PSO1	Applying
CO3	Distinguish different types of mushroom.	PSO2	Analyzing
CO4	Make use of medicinal and nutritive value of mushrooms	PSO1	Applying
C05	Outline mushroom cultivation technology.	PSO6	Understanding

SEMESTER-IV		
DSE 4B	**BIOINSTRUMENTATION AND RESEARCH METHODOLOGY**	**18PCMB4B**
Hrs/Week:4	**Hrs/Sem: 4x15= 60** **Hrs/Unit: 12**	**Credits:4**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Infer the general laboratory procedures and maintenance of research equipments.	PSO1	Understanding
CO2	Design the techniques of Isolation, Fractionation and Separation of cellular constituents.	PSO4	Creating
CO3	Interpret the various Spectroscopic techniques.	PSO4	Understanding
CO4	Relate the knowledge in Research and Project writing methods.	PSO5	Remembering
CO5	Extend the knowledge on presentation in seminar, conferences and writing scientific paper research journals.	PSO6	Understanding
CO6	Explain writing chapters in research journals.	PSO3	Evaluating

SEMESTER-IV		
P VII	**TECHNIQUES IN FOOD AND INDUSTRIAL MICROBIOLOGY**	**18PCMB4P1**
Hrs/Week:4	**Hrs/Sem: 4x15= 60**	**Credits:2**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Summarize the procedure for Isolation and identification of industrially important microorganisms.	PSO2	Understanding
CO2	Developskill in the techniques of ethanol Fermentation.	PSO4	Creating
CO3	Analyzethe methods on wet mount preparation of spoiled breadand grapes.	PSO1	Analyzing
CO4	Develop animmobilization technique of an enzyme or Cell.	PSO6	Creating
CO5	Identify bacteria from various spoiled food samples.	PSO1	Applying

SEMESTER-IV		
P VIII	**TECHNIQUES IN APPLIED MICROBIOLOGY**	**18PCMB4P2**
Hrs/Week:4	**Hrs/Sem: 4x15= 60**	**Credits:2**

CO. No	Upon the completetion of the course, the students will be able to:	PSO addressed	Blooms Taxonomy Classification
CO1	Evaluate the Sterility testing of Pharmaceuticals.	PSO2	Evaluating
CO2	Test the Microbiological assay of antibiotics by cup plate method.	PSO1	Creating
CO3	Extend the knowledge on production of mushroom and vermicompost.	PSO3	Understanding
CO4	Design the plant and animal tissue culture techniques.	PSO5	Creating
CO5	Develop cultivation of mushroom by using Polyethylene bag method.	PSO6	Applying