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COLLEGE FOR COMMERCE AND SCIENCE



Approved by Government of TamilNadu & Affiliated with Periyar University, Salem
Pallakapalayam, Komarapalayam, Namakkal Dt-637 303
Tamilnadu, India
www.excelinstitutions.com

2021-22 REGULATION

DEPARTMENT OF MICROBIOLOGY

M.Sc MICROBIOLOGY

Programme Outcome (POs)	
PO1	Employability Skill Inculcate contemporary business practices to enhance employability skills in the competitive environment.
PO2	Entrepreneurial Skill Equip with skills and competencies to become an entrepreneur.
PO3	Contribution to Society Succeed in career endeavors and contribute significantly to society.
PO4	Multicultural competence Possess knowledge of the values and beliefs of multiple cultures and a global perspective.

Program Specific Outcome (PSOs)	
PSO1	Placement To prepare the students who will demonstrate respectful engagement with others' ideas, behaviors, beliefs and apply diverse frames of reference to decisions and actions.
PSO2	Entrepreneur To create effective entrepreneurs by enhancing their critical thinking, problem solving, decision making and leadership skill that will facilitate startups and high potential organizations.
PSO3	Research and Development Design and implement HR systems and practices grounded in research that comply with employment laws, leading the organization towards growth and development.
PSO4	Contribution to Business World To produce employable, ethical and innovative professionals to sustain in the dynamic business world.



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DEPARTMENT OF MICROBIOLOGY

2021-22 REGULATION - COURSE OUTCOMES

Course Code	Course Title	Course Outcomes	
SEMESTER-I			
21PMI01	GENERAL MICROBIOLOGY	CO1	Gain a strong foundation on general microbiological practices .
		CO2	Acquire knowledge on the principles of different types of microscopes and their applications
		CO3	Learn the basics of various characteristics features of divisions used in the classification of bacteria, fungi, protozoa and algae
		CO4	Know the basics of Microbial taxonomy and Metabolism of microbes
		CO5	Study the different types of metabolic strategies.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	M	M	M	L
CO2	M	L	M	M
CO3	M	-	L	M
CO4	M	-	L	S
CO5	M	-	M	S

S- Strong M-Medium L-Low



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21PMI02	IMMUNOLOGY AND IMMUNOTECHNOLOGY	CO1	Gain a strong foundation on general immunological practices
		CO2	To understand the concepts of antigen, antibody interactions.
		CO3	Categorize MHC and understand its significance.
		CO4	To understand the concepts of human immune system via hypersensitivity reactions.
		CO5	Understanding the various drugs and vaccines in emerging diseases.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	M	M	M	M
CO2	M	M	M	M
CO3	-	-	L	M
CO4	M	S	S	S
CO5	S	S	S	S

S- Strong M-Medium L-Low



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21PMI03	CELL AND MOLECULAR BIOLOGY	CO1	Gain a strong foundation on general Cell Structures and their functions.
		CO2	Understanding the basic knowledge of cell division and signaling mechanisms.
		CO3	Understanding the Molecular Structure of Genes.
		CO4	Provide knowledge on structure and replication of DNA.
		CO5	Basic process and encoding Genetic level important mechanisms.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	M	M	L	S
CO2	S	M	M	S
CO3	S	L	M	S
CO4	M	M	M	M
CO5	S	L	M	M

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21PMIE01	INHERITANCE BIOLOGY	CO1	Acquire knowledge about Mendelian Principle.
		CO2	To provide in-depth knowledge on gene mapping methods
		CO3	Examine mechanisms of gene transfer and recombination
		CO4	Infer the causes and types of DNA mutation and summarize the DNA repair mechanisms.
		CO5	Analyze gene transfer and recombination methods.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	-	M	-	M
CO2	M	M	L	M
CO3	S	L	M	M
CO4	M	S	M	M
CO5	M	L	S	M

S- Strong M-Medium L-Low



SEMESTER-III

21PMBP01	GENERAL MICROBIOLOGY AND IMMUNOLOGY PRACTICAL	CO1	Perform the various staining techniques of bacteria and study the growth rate of bacteria.
		CO2	Understand the various methods to isolate and identify the Microorganisms.
		CO3	Learn the pure culture technique .
		CO4	To investigate the antigen & antibody reactions.
		CO5	To familiarize with viral diagnosis methods.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	M	M	M	M
CO2	M	M	M	M
CO3	M	L	L	M
CO4	S	S	M	S
CO5	S	S	S	S

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21PMBP02	CELL AND MOLECULAR BIOLOGY PRACTICAL	CO1	Study the isolation of DNA and RNA from Prokaryotes.
		CO2	Elucidate the methods of Genomic and Plasmid DNA isolation
		CO3	Explain methods of protein separation.
		CO4	Explain the Gradient plate technique.
		CO5	Outline the role of phages in genetics.

Mapping with Programme Outcomes

CO'S	PO1	PO2	PO3	PO4
CO1	M	M	M	M
CO2	M	M	M	M
CO3	M	M	M	M
CO4	M	M	L	M
CO5	M	S	M	M

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SEMESTER-II

21PMI04	MEDICAL BACTERIOLOGY AND MYCOLOGY	CO1	understand the basic information on bacterial disease
		CO2	Apply their acquired knowledge on laboratory techniques on diagnosis of bacterial diseases.
		CO3	Gain wide information regarding various types of bacterial infections enable proper diagnosis and treatment of various infections caused by bacteria .
		CO4	understand the basic information on fungal disease.
		CO5	Gain wide information about several types of fungal infections and their diagnosis and treatment strategies.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	M	M	M	M
CO2	M	M	M	M
CO3	M	M	M	M
CO4	M	M	M	M
CO5	S	M	S	M

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21PMI05	INDUSTRIAL AND PHARMACEUTICAL MICROBIOLOGY	CO1	To understand the basic information about Industrially important microorganisms.
		CO2	Gain wide information regarding various types of bacterial and fungal Biochemical process and Fermentations.
		CO3	Microbial production of various industrial important products by bacteria and fungi.
		CO4	Understanding the production of vaccines and their standardization.
		CO5	Acquiring knowledge on Pharmaceutical microbiological process by checking sterility of the samples.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	M	M	-	L
CO2	M	S	-	M
CO3	M	S	-	M
CO4	S	S	S	M
CO5	S	M	S	M

S- Strong M-Medium L-Low



21PMI06	GENETIC ENGINEERING AND ADVANCES IN BIOTECHNOLOGY	CO1	Recall the basics and importance of enzymes in molecular research.
		CO2	Apply cloning for developing novel recombinant products.
		CO3	Develop transformants for production of various pharmacologically important products.
		CO4	Apply gene transfer technology for controlling plant diseases.
		CO5	Demonstrate sequencing method for bacterial identification.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	M	M	M	M
CO2	M	L	M	M
CO3	M	M	M	M
CO4	M	M	S	M
CO5	L	-	-	-

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21PMIHR01	HUMAN RIGHTS	CO1	Understand the core principles of human rights philosophy.
		CO2	Know the importance and functions of human rights commission.
		CO3	Know the rights from the Governance, economic and social development through various Acts .
		CO4	Understand the right to information Act, rights for women, children, Nomads, refugees and various sectors of people in our country.
		CO5	Acquiring knowledge about human rights and violation.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	M	M	M	M
CO2	M	M	M	M
CO3	M	M	M	M
CO4	M	M	S	M
CO5	M	M	S	M

S- Strong M-Medium L-Low



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21PMBP03	MEDICAL BACTERIOLOGY AND MYCOLOGY PRACTICAL	CO1	To familiarize students with medical microbiology techniques and technical knowledge on collection and processing of clinical samples.
		CO2	Understand the various methods to isolate and identify the Microorganisms from Bacterial Infection samples.
		CO3	Perform the various staining techniques of bacteria and study the Isolation from various samples.
		CO4	Gain knowledge on antimicrobial agents and their testing methods.
		CO5	To get acquainted with medically important fungi and their metabolism

Mapping with Programme Outcomes

CO'S	PO1	PO2	PO3	PO4
CO1	M	M	M	M
CO2	M	M	M	M
CO3	M	L	M	M
CO4	M	M	M	M
CO5	M	M	M	M

S- Strong M-Medium L-Low



21PMBP04	GENETIC ENGINEERING AND INDUSTRIAL MICROBIOLOGY PRACTICAL	CO1	Gain wide information regarding various types of bacterial and fungal industrial products.
		CO2	Apply their acquired knowledge on laboratory techniques and screening of various microbial products important in commercial products.
		CO3	To learn the production of various metabolites and enzymes and acids as end products.
		CO4	Understanding the genetic analytical process.
		CO5	Acquire an idea about blotting techniques and PCR.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	M	M	M	M
CO2	M	M	M	M
CO3	M	M	M	M
CO4	M	M	M	M
CO5	S	S	S	M

S- Strong M-Medium L-Low



SEMESTER-III

21PMI07	MEDICAL VIROLOGY AND PARASITOLOGY	CO1	Understood and Recognize characters of different types of viruses causing infections, assessment of their severity, methods of diagnosis and their prophylaxis.
		CO2	Recognize how the two different classes, DNA and RNA viruses causing viral diseases in human beings.
		CO3	Conceptualized the role of viruses as well as the mechanisms underlying the pathogenicity of them, their detection and prophylaxis.
		CO4	Understanding of taxonomy of parasite and host – parasite interaction.
		CO5	In depth knowledge on clinical diagnosis, pathogenicity and life cycle of protozoans.

Mapping with Programme Outcomes

CO'S	PO1	PO2	PO3	PO4
CO1	S	M	M	M
CO2	S	-	M	M
CO3	S	M	M	M
CO4	M	M	M	M
CO5	S	M	M	M

S- Strong M-Medium L-Low



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21PMI08	FOOD, DAIRY AND ENVIRONMENTAL MICROBIOLOGY	CO1	Know the positive and negative role of microbes in food.
		CO2	Gain knowledge about fermented food products.
		CO3	Realize the importance of food sanitation and quality assurance.
		CO4	Able to get overall understand the pollution.
		CO5	Capable to understand basic knowledge about bioremediation.

Mapping with Programme Outcomes

CO'S	PO1	PO2	PO3	PO4
CO1	M	M	M	M
CO2	S	S	S	M
CO3	S	S	S	M
CO4	M	M	S	M
CO5	M	M	S	M

S- Strong M-Medium L-Low



21PMI09	SOIL, AGRICULTURAL MICROBIOLOGY BIO DEGRADATION	CO1	Able to understand the distribution of microbes in soil.
		CO2	Capable to get information about biogeochemical cycle.
		CO3	Able to get the knowledge about microbial interaction.
		CO4	Gain knowledge about microbes as biofertilizers and the aspects of application.
		CO5	Capable to get idea about plant disease.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	M	S	S	M
CO2	M	M	M	M
CO3	M	M	M	M
CO4	S	S	S	M
CO5	S	M	S	M

S- Strong M-Medium L-Low



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21PMIE02	METHODS IN BIOLOGY	CO1	Understand the analytical instruments and study the basic principles in the field of sciences.
		CO2	To gain knowledge about principles of spectroscopy .
		CO3	Understand the analytical techniques of Chromatography and electrophoresis .
		CO4	To understand the principle of different types of scans used in medical diagnosis .
		CO5	To gain information about the principles of radioactivity and its measurements .

Mapping with Programme Outcomes

CO'S	PO1	PO2	PO3	PO4
CO1	M	M	M	M
CO2	S	M	-	M
CO3	S	M	-	M
CO4	S	S	M	M
CO5	S	S	M	M

S- Strong M-Medium L-Low



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21PMBP05	MEDICAL VIROLOGY AND PARASITOLOGY	CO1	Cultivate viruses by different methods and aid in diagnosis. Perform purification and viral assay.
		CO2	Diagnose various viral diseases by different methods (serological, conventional and molecular)
		CO3	Investigate the symptoms of viral infection
		CO4	Identify the protozoans and helminthes present in stool and blood specimens.
		CO5	Perform serological and molecular diagnosis of parasitic infections.

Mapping with Programme Outcomes

CO'S	PO1	PO2	PO3	PO4
CO1	M	M	M	M
CO2	M	M	M	M
CO3	-	-	L	M
CO4	M	M	M	M
CO5	M	M	M	M

S- Strong M-Medium L-Low



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21PMBP06	FOOD, DAIRY, ENVIRONMENTAL AND AGRICULTURAL MICROBIOLOGY	CO1	Knowledge gained as collection from infected food samples .
		CO2	Capable of identifying industrially important microbes and its potential applications.
		CO3	To investigate various extracellular enzyme producers in soil.
		CO4	To assess the water quality and potability.
		CO5	Improve knowledge on plant pathogens .

Mapping with Programme Outcomes

CO'S	PO1	PO2	PO3	PO4
CO1	M	M	M	M
CO2	M	M	M	M
CO3	M	M	L	M
CO4	M	M	S	M
CO5	M		S	M

S- Strong M-Medium L-Low



SEMESTER-IV

21PMI10	RESEARCH METHODOLOGY, BIO STATISTICS AND BIOINFORMATICS	CO1	Collect and present data suitable to the research design.
		CO2	Write research manuscripts and articles for journals.
		CO3	Recommend the utilization of biostatistics tools for analysis of biological data.
		CO4	Prove and justify hypothesis for a particular research.
		CO5	Apply software tools for interpretation of biological data.

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	S	M	L	M
CO2	S	M	L	M
CO3	M	M	M	M
CO4	M	M	L	M
CO5	S	M	M	M

S- Strong M-Medium L-Low