



# Excel

## COLLEGE FOR COMMERCE AND SCIENCE



Approved by Government of TamilNadu & Affiliated with Periyar University, Salem  
Pallakpalayam, Komarapalayam, Namakkal Dt-637 303  
Tamilnadu, India  
[www.excelinstitutions.com](http://www.excelinstitutions.com)

### 2021-22 REGULATION

### DEPARTMENT OF MICROBIOLOGY

<b>Programme Outcome(POs)</b>	
<b>PO1.</b>	Acquire eligibility for higher studies / technical and administrative placement in government and private sectors.
<b>PO2</b>	Attain competency to be placed in various Microbiological / Biotechnological industries.
<b>PO3.</b>	Obtain technical experience to become an entrepreneur by institutional training / internship.
<b>PO4.</b>	Understand the integral role of science in life.

<b>Program Specific Outcome(PSOs)</b>	
<b>PSO1</b>	<b>Placement</b> Prepare the students in all disciplines like agriculture, industry – medical, pharma, dairy, hotel, food and food processing, immunologicals, cosmetics, vermotechnology and water treatment for effective and respectful placement.
<b>PSO2</b>	<b>Entrepreneur</b> To create effective entrepreneur by enhancing their critical thinking, problem solving, decision making and leadership skill that will facilitate startups and high potential organizations.
<b>PSO3</b>	<b>Research and Development</b> Design and implement HR systems that comply with good laboratory practices, following ethical values, leading the organization towards growth and development
<b>PSO4</b>	<b>Contribution to Society</b> To contribute to the development of society and produce microbiological products, by collaborating with stake holders, related to the betterment of environment and mankind at the national and global level.



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### DEPARMENT OF MICROBIOLOGY

#### 2021-22 REGULATION-COURSE OUTCOMES

Course Code	Course Title	Course Outcomes	
<b>SEMESTER-I</b>			
21UMB01	BASICS OF MICROBIOLOGY	CO1	Students will get overall understanding about the fundamentals of microbiology.
		CO2	To understand the concepts of microscopy.
		CO3	Gain knowledge about the microbial evolution and diversity.
		CO4	Acquire information on anatomy of prokaryotes.
		CO5	Compare and contrast the different methods of sterilization.

#### Mapping with Programme Outcomes

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

**S- Strong M-Medium L-Low**



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<b>21UMBPO1</b>	<b>BASICS OF MICROBIOLOGY PRACTICAL</b>	<b>CO1</b>	Acquire knowledge on Cleaning of glass wares, GLP and sterilization.
		<b>CO2</b>	Gain knowledge on media preparation and cultural characteristics.
		<b>CO3</b>	Learn the pure culture technique.
		<b>CO4</b>	Learn the microscopic techniques and staining methods.
		<b>CO5</b>	Acquire knowledge on stain and staining methods.

### Mapping with Programme Outcomes

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

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### SEMESTER-II

21UMB02	MICROBIAL PHYSIOLOGY	CO1	The students will get an overall understanding of basic cell structure and classification of microorganisms based on its nutritional requirements.
		CO2	Gain knowledge on the growth pattern of microorganisms and the influence of nutrients to obtain active growth phase.
		CO3	Information on energy deriving mechanism from different energy sources.
		CO4	Study the different types of metabolic strategies.
		CO5	Acquire information on synthesis of organic molecules via photosynthetic process.

### Mapping with Programme Outcomes

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

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21UBCA02	ALLIED - II BIOCHEMISTRY –II	CO1	Understand the basics of acid - base balance of human body and gain Develop competence in handling various chromatographic techniques.
		CO2	Describe carbohydrate metabolism and gain knowledge about Diabetes mellitus.
		CO3	Learn basic concepts of Bioenergetics, mechanisms of oxidative phosphorylation
		CO4	Describe the concepts of lipid metabolism and amino acid metabolism.
		CO5	Gain knowledge about the basic terminologies, classification and mechanism of action of hormones and to demonstrate various types of second messengers.

### Mapping with Programme Outcomes

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

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21UMBP02	MICROBIAL PHYSIOLOGY PRACTICAL	CO1	Understand the principles of motility test.
		CO2	Understand the basic concepts of staining methods.
		CO3	Learn the bacterial count using different methods and anaerobic culture.
		CO4	Study the morphological demonstration of microorganisms and identification.
		CO5	Study the biochemical identification of the bacteria.

### Mapping with Programme Outcomes

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

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### SEMESTER-III

21UMB03	MICROBIAL GENETICS AND MOLECULAR BIOLOGY	CO1	Understand the knowledge about the genetic material and DNA replication.
		CO2	Created an understanding about mutation and its types.
		CO3	Procured the knowledge about Transcription and Translation.
		CO4	Learned about gene transfer mechanisms in bacteria.
		CO5	Examine mechanisms of gene transfer and recombination.

### Mapping with Programme Outcomes

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

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21UCSA01	FUNDAMENTALS OF COMPUTERS	CO1	Remember the basics of computers.
		CO2	Understand the number system.
		CO3	Demonstrate the functions of computer system.
		CO4	Study the input and output system,
		CO5	Analyze of data processing.

### Mapping with Programme Outcomes

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

**S- Strong M-Medium L-Low**





21UMBS01	APPLIED BIOTHECNIQUES	CO1	To acquire the basic science behind the research techniques.
		CO2	Students will become familiar with biotechniques like chromatography, electrophoresis and spectrophotometry for quantitative and qualitative analysis.
		CO3	Students will be inculcated with precise and accurate interpretation skills in the research sector.
		CO4	To imbibe the knowledge on modernized analytical methods to step in hi-tech industries.
		CO5	Understand the analytical techniques of Chromatography and electrophoresis.

### Mapping with Programme Outcomes

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

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<b>21UMBP03</b>	<b>MICROBIAL GENETICS AND MOLECULAR BIOLOGY PRACTICAL</b>	<b>CO1</b>	Provide knowledge on structure and replication of DNA.
		<b>CO2</b>	Elucidate the methods of Genomic and Plasmid DNA isolation.
		<b>CO3</b>	Explain methods of protein separation.
		<b>CO4</b>	Explain the Gradient plate technique.
		<b>CO5</b>	Outline the role of phages in genetics.

### Mapping with Programme Outcomes

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

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### SEMESTER-IV

<b>21UMB04</b>	<b>IMMUNOLOGY AND IMMUNO TECHNOLOGY</b>	<b>CO1</b>	The students will get overall understanding of history and evolution of immunology and immune response developed by human system
		<b>CO2</b>	To understand the concepts of antigen, antibody interactions and influence on human immune system via hypersensitivity reactions, autoimmune diseases etc.
		<b>CO3</b>	Detailed understanding of Immunoematology, Transplantation Immunology and Vaccines which will make the minds aware of infection, prevention and control.
		<b>CO4</b>	Help the students to learn techniques involved in immunological concepts and its role in diagnostic immunology
		<b>CO5</b>	To provide in-depth knowledge on immuno-techniques.

### Mapping with Programme Outcomes

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

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21UMBP04	IMMUNOLOGY AND IMMUNO TECHNOLOGY PRACTICAL	CO1	To gain hands-on knowledge to identify Blood group and typing.
		CO2	To acquire adequate skill to perform latex agglutination reactions.
		CO3	To analyze precipitation reactions in gels.
		CO4	To investigate the antigen & antibody reactions in electrophoresis.
		CO5	To familiarize with viral diagnosis methods.

### Mapping with Programme Outcomes

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

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21UMBS02	MUSHROOM-CULTIVATION TECHNIQUS	CO1	Able to get basic idea about mushroom cultivation and Learned techniques about spawn multiplication.
		CO2	Learned about the diseases of edible mushrooms.
		CO3	Made the students ideally skilled for self-employment.

### Mapping with Programme Outcomes

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

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21UCSA02	COMPUTER APPLICATIONS IN OFFICE	CO1	Remember the basics of MS word.
		CO2	Understand MS word.
		CO3	Demonstrate the functions of MS excel.
		CO4	Study the basics of MS excel workbooks.
		CO5	Analyze of data processing with MS power point.

### Mapping with Programme Outcomes

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

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### SEMESTER-V

<b>21UMB05</b>	<b>MEDICAL BACTERIOLOGY</b>	<b>CO1</b>	Understood the basic and general concepts of infections and the various parameters of causing infections.
		<b>CO2</b>	Developed a thorough understanding of common Gram positive bacterial diseases of human being.
		<b>CO3</b>	Conceptualized the role of the some bacteria as well as the mechanisms underlying the pathogenicity of them.
		<b>CO4</b>	Developed a thorough understanding of some special pathogenic bacteria affecting the human organ systems.
		<b>CO5</b>	Assessment of their severity including the broad categorization of the methods of diagnosis.

### Mapping with Programme Outcomes

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

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21UMB06	FOOD MICROBIOLOGY	CO1	Know the positive and negative role of microbes in food.
		CO2	Gain knowledge about fermented food products.
		CO3	Understand the significance of food borne diseases.
		CO4	Realize the importance of food sanitation and quality assurance.
		CO5	Comprehend the importance of food standards and quality assurance.

### Mapping with Programme Outcomes

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

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21UMB07	MEDICAL VIROLOGY	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	Developed a thorough understanding of some special pathogenic viruses causing recent epidemics and threatening the whole world.
		CO5	Gain knowledge about vaccine for viral diseases.

### Mapping with Programme Outcomes

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

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21UMBE01	MEDICAL PARASITOLOGY	CO1	Understanding of taxonomy of parasite and host – parasite interaction.
		CO2	In depth knowledge on clinical diagnosis, pathogenicity and life cycle of protozoans.
		CO3	Assimilate various lab technologies for diagnosis of medically important protozoans and their treatment.
		CO4	To develop skills in the diagnosis of vector borne diseases.
		CO5	Articulate the major means of transmission of parasites by insect vectors and their control measures.

### Mapping with Programme Outcomes

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

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21UMBS03	MICROBIAL BIOTECHNOLOGY	CO1	Understand the knowledge about The Basic Principles of Gene Cloning.
		CO2	Acquire knowledge about Molecular Cloning Tools.
		CO3	Created an understanding about Cloning Vectors Gene transfer Techniques.

### Mapping with Programme Outcomes

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

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<b>21UMBPO5</b>	<b>MEDICAL AND FOOD MICROBIOLOGY</b>	<b>CO1</b>	To familiarize students with medical microbiology techniques and technical knowledge on collection and processing of clinical samples.
		<b>CO2</b>	To learn the techniques for isolation and identification of bacterial pathogens.
		<b>CO3</b>	To get acquainted with medically important fungi and their metabolism.
		<b>CO4</b>	To acquire knowledge on enumeration of bacteria from milk and milk quality analysis.
		<b>CO5</b>	To investigate various types of food borne diseases.

### Mapping with Programme Outcomes

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

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### SEMESTER-VI

21UMB08	SOIL AND AGRICULTURAL MICROBIOLOGY	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	S	S	-	M
CO2	M	-	-	M
CO3	M	M	L	M
CO4	M	S	M	S
CO5	M	L	L	L

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21UMB09	ENVIRONMENTAL MICROBIOLOGY	CO1	Able to understand about the microbial diversity in environmental,
		CO2	Capable to get information about the ecosystem.
		CO3	Gain knowledge about microbial interactions.
		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	-	-	L
CO2	M	-	-	M
CO3	M	M	L	L
CO4	M	L	L	M
CO5	S	S	M	M

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<b>21UMB10</b>	<b>INDUSTRIAL MICROBIOLOGY</b>	<b>CO1</b>	Capable of identifying industrially important microbes and its potential applications
		<b>CO2</b>	Able to select and design a fermentation process for a specific product
		<b>CO3</b>	Able to device means to improve the production rate of existing fermentation processes
		<b>CO4</b>	Capable of designing processes for higher production yield at economically cheaper rate
		<b>CO5</b>	To gain information about production of microbial products.

### Mapping with Programme Outcomes

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

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<b>21UMBE02</b>	<b>MEDICAL MYCOLOGY</b>	<b>CO1</b>	Basic understanding of fungi, their morphology and culture methods of fungi.
		<b>CO2</b>	Obtain knowledge on pathogenicity and laboratory diagnosis of medically important fungi.
		<b>CO3</b>	Grasp knowledge on mycotoxins and their importance.
		<b>CO4</b>	Gain knowledge on antifungal agents and their testing methods.
		<b>CO5</b>	Acquire in-depth knowledge on fungal diseases and the mechanism behind the disease process.

### Mapping with Programme Outcomes

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

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21UMBS04	ENTERPRENEURIAL MICROBIOLOGY	CO1	Able to make the students ideally skilled for self-employment.
		CO2	Gained knowledge about fermented products.
		CO3	To understand the significance of patenting.

### Mapping with Programme Outcomes

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

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21UMBP06	AGRICULTURE, ENVIRONMENTAL AND INDUSTRIAL MICROBIOLOGY PRACTICAL	CO1	To assess the water quality and probability.
		CO2	To investigate various extracellular enzyme producers in soil.
		CO3	To gain knowledge on preparation of bio fertilizers.
		CO4	Improve knowledge on plant pathogens.
		CO5	To gain information about production of microbial products.

### Mapping with Programme Outcomes

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

S- Strong M-Medium L-Low