



# MAZHARUL ULOOM COLLEGE, AMBUR

(Recognized by UGC under section 2f and 12B, Affiliated to Thiruvalluvar University, Vellore)

## DEPARTMENT OF MICROBIOLOGY

FOR AY 2020-21 ONWARDS

### PROGRAMME OUTCOME

S.NO	Programme Outcomes
PO1	To provide an insight on the fundamentals of Microbiology
PO2	To enable the students to learn the biology of microorganisms
PO3	To practice continuous learning to improve knowledge
PO4	To use basic microbial technologies and methods for skill development
PO5	To use current microbial technologies and methods to improve healthy life
PO6	To use current microbial technologies and methods to create a better environment
PO7	To prepare students for promising career options in the field of microbiology
PO8	To apply the knowledge in day to day life
PO9	To have an understanding of professional responsibility
PO10	To have an ability to function in multidisciplinary working atmosphere

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### COURSE OUTCOME

S.No	Semester	Course Name	Course Outcomes
1	I	<b>Fundamentals of Microbiology</b>	CO1-After studying unit-1, the student will be able to Understand the scope and relevance of Microbiology as a scientific discipline CO2-After studying unit-2, the student will be able to Decide on the correct type of microscopy and staining CO3-After studying unit-3, the student will be able to Gain knowledge on the various classification of microorganisms CO4-After studying unit-4, the student will be able to Study the morphology and structure of microorganism CO5-After studying unit-5, the student will be able to Get acquainted with various sterilization techniques
2	I	<b>Biochemistry-I</b>	CO1-Explain the structure, biological importance of carbohydrates from monosaccharide to polysaccharide CO2-Identify the structure and classification of amino acids CO3-Classify proteins and explain their properties CO4-Define and classify lipids with example, explain the properties of fats and describe the structure and biological functions of phospholipids, glycolipids and sterols CO5-Illustrate the structure of nucleotide, distinguish DNA and RNA and describe the structure of DNA, types of RNA and their biological functions
3	II	<b>Microbial physiology</b>	CO1-After studying unit-1, the student will be able to Outline on the nutritional requirement and nutritional types of bacteria CO2- After studying unit-2, the student will be able to Demonstrate various techniques employed in the cultivation of microorganisms



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			<p>CO3- After studying unit-3, the student will be able to Discuss on the different phases of microbial growth</p> <p>CO4- After studying unit-4, the student will be able to Explain the basic concepts of microbial metabolism</p> <p>CO5- After studying unit-5, the student will be able to Elaborate on the biosynthesis of bacterial cell wall and mechanism of photosynthesis</p>
4	II	<b>Biochemistry-II</b>	<p>CO1- Illustrate the reactions of various metabolic disorders</p> <p>CO2- Acquire knowledge on the various metabolic disorders</p> <p>CO3- Classify enzymes and explain their functions</p> <p>CO4- Define and classify vitamins with examples, explain the source, RDA and functions of fat soluble and water soluble vitamins</p> <p>CO5- Illustrate the source, RDA and functions of minerals</p>
5	II	<b>Experiments in basic microbiology</b>	<p>CO1-Observe microorganisms by staining</p> <p>CO2-Demonstration motility of bacteria</p> <p>CO3-Determines the size of microorganisms</p> <p>CO4-Prepare culture media</p> <p>CO5-Demonstrate the biochemical activity of bacteria</p>
6	II	<b>Biochemistry (Allied Practical)</b>	<p>CO1-Quantify glucose in unknown solution by benedicts method</p> <p>CO2- Quantify ascorbic acid in lemon by Dichlorophenol indo phenol dye method</p> <p>CO3-Quantify glycine by Sorenson's formal titration method</p> <p>CO4-Qualitatively analyze the carbohydrate and amino acids and report the type of carbohydrate based on specific tests</p> <p>CO5- Differentiate the carbohydrate based microscopic examination of the crystal structure</p>
7	III	<b>Immunology</b>	<p>CO1-After studying unit-1, the student will be able to Outline the history and scope of Immunology.</p> <p>CO2-After studying unit-2, the student will be able to Explain the structure, functions and properties of immune cells</p> <p>CO3-After studying unit-3, the student will be able to Compare the different types of antibodies and relate them to antigens</p>



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			<p>CO4-After studying unit-4, the student will be able to Comprehend on the complement system and Major histocompatibility complex</p> <p>CO5-After studying unit-5, the student will be able to Familiarize with immunohaematology and hypersensitivity reaction</p>
8	III	<b>Bionstrumentation</b>	<p>CO1-appreciate the importance of instrumentation in Biology labs</p> <p>CO2-illustrate the design of the instruments</p> <p>CO3-compare different instruments</p> <p>CO4-make use of different instruments for analysis</p> <p>CO5-apply the knowledge of instruments in biological analysis</p>
9	IV	<b>Microbial genetics</b>	<p>CO1-Outline the structure, replication and function of DNA</p> <p>CO2-Explain about mutation, types of mutation and DNA repair mechanism.</p> <p>CO3-Elaborate the different gene transfer methods in bacteria.</p> <p>CO4-Compile the gene regulation in prokaryotes and eukaryotes.</p> <p>CO5-Describe transposons and gene mapping.</p>
10	IV	<b>Biostatistics</b>	<p>CO1-appreciate the importance of statistics</p> <p>CO2-differentiate the basic terms and formulae in statistics</p> <p>CO3-relate the formulae with the applications</p> <p>CO4-plan analysis with statistical tools</p> <p>CO5-apply statistical tools in biological subjects</p>
11	IV	<b>Bioinstrumentation and Biostatistics practical (Allied-II_</b>	<p>CO1-understand the basic principles instruments</p> <p>CO2-care and maintain the instruments in Biology labs</p> <p>CO3-use different instruments for analysis</p> <p>CO4-understand the basic principles biostatistics</p> <p>CO5-perform simple calculations</p> <p>CO6-make use of statistical applications</p>
12	V	<b>Medical bacteriology and mycology</b>	<p>CO1-Outline the importance of Normal microbial flora of human body and Host-Parasite relationships.</p> <p>CO2-Explain about the diseases caused by the bacterial pathogens, prevention and treatment.</p>

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			<p>CO3-Discuss the different modes of transmission of bacterial diseases and the preventive measures.</p> <p>CO4-Compare the morphological classification of fungi, and perform isolation of fungi from clinical specimen.</p> <p>CO5-Compile the common mycotic diseases, their pathogenicity and various antifungal agents used for treatment</p>
13	V	<b>Agricultural and Environmental microbiology</b>	<p>CO1-Outline the physical, chemical properties and microflora of soil.</p> <p>CO2-Explain the role of microorganisms in biogeochemical cycles.</p> <p>CO3-Compile the significance of microbial interactions and phytopathogens.</p> <p>CO4-Demonstrate the air sampling techniques and summarize on air borne pathogens.</p> <p>CO5Apply the processes involved in the treatment of municipal water supplies</p>
14	V	<b>Food microbiology</b>	<p>CO1-Outline the important microorganisms present in food.</p> <p>CO2-Elaborate the principles and methods of food preservation.</p> <p>CO3-Compile the contamination, spoilage and spoilage of various foods.</p> <p>CO4-Demonstrate and prepare fermented foods.</p> <p>CO5-Summarize bacterial and non-bacterial food borne diseases</p>
15	V	<b>Human anatomy and physiology</b>	<p>CO1-Explain the organs and functions of Respiratory System.</p> <p>CO2-Outline the structure of organs of Gastro Intestinal System.</p> <p>CO3-Discuss about the Musculoskeletal and Nervous System.</p> <p>CO4-Describe the features of Circulatory system and Endocrine System.</p> <p>CO5-Compile the information on Reproductive and urinary System</p>
16	VI	<b>Medical virology and parasitology</b>	<p>CO1-Explain the properties, classification and cultivation of viruses.</p> <p>CO2-Outline the zoonotic and arthropod borne diseases.</p> <p>CO3-Discuss about the oncogenic viruses.</p> <p>CO4-Describe the classification of parasites and demonstrate the laboratory diagnosis of parasitic diseases.</p> <p>CO5-Compile the information on common parasites, protozoan and metazoan diseases</p>

  
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17	VI	<b>Industrial microbiology</b>	CO1-Outline the history and scope of Industrial Microbiology. CO2-Explain about the methods involved in screening and development of production strains. CO3-Elaborate on the principles, design and types of bioreactors. CO4-Compile on the fermentation process and downstream processing. CO5-Discuss on the industrial production of various products using microorganisms
18	VI	<b>Genetic engineering</b>	CO1-Get acquainted with the basics of Genetic Engineering CO2-Understand the role of various enzymes acting on DNA CO3-Gain knowledge of Cloning vectors CO4-Understand the Gene / DNA transfer techniques CO5-Appreciate the applications of rDNA technology
19	VI	<b>Bioinoculants technology</b>	CO1-Understand the role of Plant Growth Promoting Rhizobacteria CO2-Get acquainted with production and field application of <i>Rhizobium</i> and <i>Frankia</i> CO3-Gain knowledge of Cyanobacteria as N <sub>2</sub> fixers CO4-Understand the Phosphate solubilizing microbes CO5-Appreciate the role of Mycorrhiza in plant growth promotion

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