



## **Course Outline Form**

## **ODD SEMESTER 2019**

*Dear Student: Course outlines are intended to provide students with an overall plan for a course to enable them to function efficiently and effectively in the course.*

*Academic Programs  
BSc Microbiology  
EMEA College  
Kondotty*

## Course Outline : MBG1B01. (2019-2020)

Name of the Stream	Science
Name of the Programme	BSc Microbiology
Name of the Course	MBG1B01.
Nature of the Course	Core Course
Semester	First
Lecturer(s)	Jisha P J
Name of the Coordinator	
Year	2019-2020
No of Credits	3
No of Contact Hours	54
Course Description	Introduction to Microbiology is appropriate for students with some background in biology and chemistry whose career path intersects the study of microbes or simply have an interest in microbiology. This course introduces the basic principles of microbiology examining the microbes that inhabit our planet and their effect on the biosphere. Lecture topics explore the basic principles of microbiology and examine the microbes that inhabit our planet and their effect on the biosphere. Students will analyze the influence of microbiology and 21st century challenges and opportunities that arise from our changing relationship with and understanding of microbes.
Course Objectives	The main objective of the course is to provide students with the basis to face the study of the major fundamentals of microbiology including bacteriology, virology and immunology. The main knowledge provided will be: ... o basic knowledge of the main microbiological techniques to be applied in the laboratory.
Course Outcome	Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea Know various Culture media and their applications and also understand various physical and chemical means of sterilization Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi and algae Master aseptic techniques and be able to perform routine culture handling tasks safely and effectively Comprehend the various methods for identification of unknown microorganisms Understand the microbial transport systems and the modes and mechanisms of energy conservation
Assessment Method	Assignments Class Tests Term Exam Seminars
Teaching Methods Used	
Textbook	

References	<ol style="list-style-type: none"> <li>1. Fundamentals of Bacteriology by A.J Salle</li> <li>2. Microbiology by Pelczar et al</li> <li>3. Fundamentals of Microbiology by Mertus Frobisher</li> <li>4. General microbiology by Stanier et al</li> <li>5. Text book of Microbiology by Prescott.</li> <li>6. Principles of Microbiology by Ronald Atlas</li> <li>7. Microbiology: An Introduction by Tortora GJ, Funke BR, and Case CL.</li> <li>8. Microbiology: Principles and Explorations by Black.</li> <li>9. Brock Biology of Micro-organisms.</li> <li>10. Alcamos Fundamentals of Microbiology</li> </ol>
Internet Resources	

### Internal Exam Pattern

Items	Marks/20	Marks/15
Assignment	4	3
Test Paper(s)/Viva voce	8	6
Seminar/Presentation	4	3
Class Room Participation based on Attendance	4	3
<b>Total</b>	<b>20</b>	<b>15</b>

### External Exam Pattern

Question Type	No of Question	Marks/Question	Total Marks
Short Questions(2-3 Sentences)	15	2	Ceiling 25
Paragraph / Problem Type	8	5	Ceiling 35
Essay Type	2 out of 4	10	20
<b>Total</b>			<b>80</b>
<b>Time</b>			<b>2.5 hrs</b>

Graduate Attributes	<p><b>Name of the Course:</b> MBG1B01.</p> <p><b>Knowledge</b></p> <p><b>Academic and Intellectual Skills</b></p> <ul style="list-style-type: none"> <li>Self Learning</li> <li>Cognitive Skills</li> </ul> <p><b>Professional Skills</b></p> <ul style="list-style-type: none"> <li>Research Skills</li> </ul> <p><b>Personal Skills</b></p> <ul style="list-style-type: none"> <li>Lifelong Learning</li> </ul> <p><b>Attitude and Values</b></p> <ul style="list-style-type: none"> <li>Global Citizen</li> </ul>
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## Course Schedule

Unit 1. Scope and history of Microbiology, spontaneous generation vs. biogenesis. Contributions of the following scientists in various areas of Microbiology - Anton van Leeuwenhoek, Joseph Lister, Paul Ehrlich, Edward Jenner, Louis Pasteur, Robert Koch, Martinus W. Beijerinck, Sergei N. Winogradsky, Alexander Fleming, Selman A. Waksman. Beneficial and harmful microbes.	Week 1 Week 2
Unit 2. Eukaryote and prokaryote - differences. Differences between archaeobacteria and eubacteria. Bacterial forms and arrangement of cells. Actinomycetes, Mold and yeast forms. Viral and bacteriophage forms.	Week 3 Week 4 Week 5
Unit 3. Ultrastructure of bacteria- External structures-glycocalyx, capsule, flagella, fimbriae and pili. Cell-wall: Composition and detailed structure of gram positive and gramnegative cell walls, Archaeobacterial cell wall, sphaeroplasts, protoplasts, and L-forms. Effect of penicillin and lysozyme on the cell wall. Cell Membrane: Structure, function and chemical composition of bacterial and archaeal cell membranes. Cytoplasm: Ribosomes, mesosomes, inclusion bodies, nucleoid, chromosome and plasmids Endospore: Structure, formation, stages of sporulation.	Week 6 Week 7 Week 8 Week 9 Week 10 Week 11
Unit 4. Microscopy- bright field, dark field, phase contrast, fluorescent and electron microscopy. Staining techniques- simple, negative, Grams, spore, flagella, acid fast, volutin, capsule and Fielgen staining.	Week 12 Week 13 Week 14 Week 15
Unit 5. Sterilisation and disinfection techniques- Physical and chemical methods- flaming, boiling, autoclaving, inspissation, Heat, Filtration, Radiation. Aseptic methods laminar air flow hood. Disinfectants and its testing.	Week 16 Week 17 Week 18

## Contact Details

Name	Jisha P J
Phone	9995630321
Email	jishapj76@gmail.com
Website	emeacollege.ac.in