

As Per NEP 2020

University of Mumbai



Syllabus for Basket of OE Vertical 3

Faculty of Science

Board of Studies in Microbiology

Second Year Programme – B.Sc. (Microbiology)

Semester

III

Title of Paper

Credits

I) MICROBES & HEALTH

2

From the Academic Year

2025-26

Title of Paper MICROBES & HEALTH

Sr. No.	Heading	Particulars
1	Description of the course : Including but Not limited to :	This course provides an understanding of the role of microbes in human health and diseases. It covers beneficial and pathogenic microorganisms, disease prevention strategies, and antimicrobial resistance. The course highlights the importance of vaccination.
2	Vertical :	Open Elective
3	Type :	Theory / Practical
4	Credit:	2 credits (1 credit = 15 Hours for Theory)
5	Hours Allotted :	30 Hours
6	Marks Allotted:	50 Marks
7	Course Objectives: CO1. To understand the diversity of microbes and their role in human health and disease. CO2. To learn about the human microbiome and its significance in immunity and digestion. CO3. To identify major microbial pathogens and their mechanisms of infection. CO4. To explore the role of probiotics, prebiotics, antibiotics, and vaccines in health management. CO5. To analyze the emerging trends in antimicrobial resistance and global public health concerns	
8.	Course Outcomes: On completion of this course learner will be able to: OC1. Recall the normal flora of the human body. OC2. Understand common microbial infections and their impact on health. OC3. Discuss the significance of the microbiome in maintaining health. OC4. Correlate microbes and their implications in drug resistance . OC5. Evaluate the role of microbes in biotechnological advancements like vaccine production and discovery of medicines.	

Course code	Open Elective Course MICROBES & HEALTH	Credits 2 (30 L/hr)
Module 1	Introduction to Microbes and Human Health	15 Lectures
1.1	Introduction to Microbes -Types of microorganisms (bacteria, viruses, fungi, protozoa)	3
1.2	Microbes in the Human Body - Normal flora and harmful microbes	4
1.3	Microbes and Diseases - Common infections caused by microbes(Tabulation - airborne, water borne, food borne, soil-borne) Influenza , Diarrhoea , Typhoid- Case studies , Modes of transmission	6
1.4	Microbes in Digestion - Importance of gut bacteria for health	2
Module 2	Disease Prevention Strategies	15 Lectures
2.1	General strategies for disease prevention. - Sanitation and hygienic practices, Sustainability goals	4
2.2	Microbes for Good Health - Probiotics and their benefits with relevant market examples	4
2.3	Disease Prevention - Vaccines and use of microbes in medicine, types with examples	4
2.4	Treatment of diseases - Concept of antibiotics and development of Antibiotic resistance.	3
10.	Text Books: <ol style="list-style-type: none"> 1. Stephen H. Gillespie, Kathleen B. Bamford, Medical Microbiology and Infection at a Glance, Fourth edition 2. Apurba S. Sastry & Sandhya Bhat, Essentials of Medical Microbiology 3. P. Chakraborty, Fundamentals of Microbiology 4. Rajesh Bhatia & Rattan Lal Ichhpujani, Medical Microbiology 5. Recent WHO Reports on AMR and Infectious Diseases 6. <u>THE 17 GOALS Sustainable Development</u> 	

11.	<p>Reference Books:</p> <ol style="list-style-type: none"> 1. Satish Gupte MD, The Short Textbook of Medical Microbiology (Including Parasitology), Tenth Edition 2. A Textbook of Human Microbes and Parasites: A Quick Reference to Paramedics, Biologists and Biotechnologists by P Venkatesan , G Surendra Babu 3. Ways Microorganisms Stay, Enter The Body And Disease Prevention by Olatundun Solomon (Author)
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12	Internal Continuous Assessment: 40%	External, Semester End Examination 60% Individual Passing in Internal and External Examination																									
13	Continuous Evaluation through: Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc. (at least 3)	As per paper pattern*																									
14	<p>Format of Question Paper: for the final examination</p> <p style="text-align: center;">*Paper Pattern for 30 marks :</p> <p style="text-align: center;">30 Marks per paper Semester End Theory Examination: Duration - These examinations shall be of one hour duration</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Question</th> <th style="width: 55%;">Option</th> <th style="width: 10%;">Mark s</th> <th style="width: 20%;">Questions Based on</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Q1A</td> <td style="text-align: center;">Attempt any two out of four (5 marks each)</td> <td style="text-align: center;">10</td> <td style="text-align: center;">Based on Module 1</td> </tr> <tr> <td style="text-align: center;">Q1B</td> <td style="text-align: center;">Attempt any five out of ten objective (MCQ type only) questions (1 marks each)</td> <td style="text-align: center;">5</td> <td style="text-align: center;">Based on Module 1</td> </tr> <tr> <td style="text-align: center;">Q2A</td> <td style="text-align: center;">Attempt any two out of four (5 marks each)</td> <td style="text-align: center;">10</td> <td style="text-align: center;">Based on Module 2</td> </tr> <tr> <td style="text-align: center;">Q2B</td> <td style="text-align: center;">Attempt any five out of ten objective (MCQ type only) questions (1 marks each)</td> <td style="text-align: center;">5</td> <td style="text-align: center;">Based on Module 2</td> </tr> <tr> <td colspan="2" style="text-align: center;">Total</td> <td style="text-align: center;">30</td> <td></td> </tr> </tbody> </table>			Question	Option	Mark s	Questions Based on	Q1A	Attempt any two out of four (5 marks each)	10	Based on Module 1	Q1B	Attempt any five out of ten objective (MCQ type only) questions (1 marks each)	5	Based on Module 1	Q2A	Attempt any two out of four (5 marks each)	10	Based on Module 2	Q2B	Attempt any five out of ten objective (MCQ type only) questions (1 marks each)	5	Based on Module 2	Total		30	
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Sd/-
Sign of BoS
Coordinator
Dr. Aparna Dubhashi
BoS in Microbiology

Sd/-
Sign of the
Offg. Associate Dean
Dr. Madhav R. Rajwade
Faculty of Science &
Technology

Sd/-
Sign of the Offg. Dean
Prof. Shivram S. Garje
Faculty of Science &
Technology