



MGM INSTITUTE OF HEALTH SCIENCES

(Deemed University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

Sector-01, Kamothe, Navi Mumbai - 410 209

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Program Outcomes

Restructuring syllabus of M.Sc. Medical Microbiology Program as per
Choice Based Credit System (CBCS)

Name of the Degree: M.Sc. Medical Microbiology

AIMS OF THE PROGRAM

Microbiologist are in great demand of India and abroad.

Postgraduate qualification in Microbiology can earn to placements in hospital laboratories and research laboratories run by the government and the corporate sector. Private sector placements are in both technical and managerial positions. The demand is growing at an accelerated rate, which makes career prospects in this field bright.

In academics, one can go for higher qualifications like Ph.D. in various field of biology. There is a great demand of this course abroad as most of the foreign countries are looking for expert in this field. After completion of the course, one can work as Tutor or Medical Microbiologist in a Medical set up or as a Research Associate in Research Laboratories.

Course Outcomes

ACADEMIC SYLLABUS FOR SEMESTER-I

Name of the Programme	M.Sc. MEDICAL MICROBIOLOGY
Course Code	
Name of the Course	MICROBIOLOGY Part 1

Course Objective (Teaching Objectives)	<ul style="list-style-type: none">• To teach basic Microbiological concepts related to General Microbiology• To teach basic Microbiological concepts related to Immunology
Course Outcomes (learning Objectives)	<ul style="list-style-type: none">• To understand the basic Microbiological concepts of General physiology• To understand the basic Microbiological concepts of Immunology,

Unit no.	THEORY TOPICS	Hours allotted 45hrs
1.	General Microbiology	(35 hrs)
	Historical aspects	1
	Classification of living beings	1
	Study of bacteria	2
	Structure of Bacterial cell	2
	Growth and Multiplication of Bacteria	2
	Sterilization	3

	Disinfection	3
	Culture Media	2
	Culture Methods	2
	Identification of Bacteria	2
	Bacterial Genetics	2
	Antimicrobial Agents	1
	Antibiotic Sensitivity Test	2
	Antibiotic Resistance	2
	Universal Safety Precautions	2
	Hospital Waste Disposal	2
	Hospital Acquired Infections	2
	Infection Control Committee	2
2.	Immunology	10 Hrs
	Infection	1 Hr
	Immunity	2 Hr
	Antigens	1 Hr
	Antibodies	1 Hr
	Complement	1 Hr
	Serological Reactions	4 Hr
	Total	45 HRS

Unit no.	TUTORIAL TOPICS	Hours allotted 15hrs
1.	Historical aspects & Microscopy	1
2.	Study of bacteria	1
3.	Sterilization	1

4.	Disinfection	1
5.	Culture Media & Culture Methods	1
6.	Identification of Bacteria	1
7.	Bacterial Genetics	1
8.	Antibiotic Sensitivity Test & Antibiotic Resistance	1
9.	Universal Safety Precautions & Hospital Waste Disposal	1
10.	Hospital Acquired Infections & Infection Control Committee	1
11.	Infection & Immunity	1
12.	Antigens & Antibodies	1
13.	Complement	1
14.	Serological Reactions	1
15.	Vaccines and Immunization Schedule	1
	Total	15hrs

Unit no.	PRACTICAL TOPICS	Hours allotted
		30 hrs
1.	General Microbiology	18 hrs
	1. Microscopy	2 Hr
	2. Study of Bacteria (Gram's Stain)	4 Hr
	3. Study of Bacteria (ZN Stain)	4 Hr
	4. Culture Media	2 Hr
	5. Identification of Bacteria	2 Hr
	6. Sterilization	2 Hr

	7. Disinfection	2 Hr
2.	Immunology	12 Hrs
	1. Widal Test & VDRL Test	2 Hr
	2. ASO, CRP, RA Test	2 Hr
	3. ELISA Test	2 Hr
	4. Test for HIV & Hepatitis	2 Hr
	5. Test for Dengue	2 Hr
	6. Vaccines & Immunization Schedule	2 Hr
	Total	30 HRS

ACADEMIC SYLLABUS FOR SEMESTER-II

Name of the Programme	M.Sc. MEDICAL MICROBIOLOGY
Course Code	

Name of the Course	MICROBIOLOGY Part 2
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Course Objective (Teaching Objectives)		<ul style="list-style-type: none"> • To teach basic Microbiological concepts related to Systemic Bacteriology • To teach basic Microbiological concepts related to Mycology • To teach basic Microbiological concepts related to Virology • To teach basic Microbiological concepts related to Parasitology • To teach basic concepts related to Applied Microbiology
Course Outcomes (Learning Objectives)		<ul style="list-style-type: none"> • To understand the basic Microbiological concepts of Systemic Bacteriology • To understand the basic Microbiological concepts of Mycology • To understand the basic Microbiological concepts related to Virology • To understand the basic Microbiological concepts related to Parasitology • To understand the basic concepts related to Applied Microbiology

Unit no.	THEORY TOPICS	No of lectures	
3.	<p data-bbox="331 674 730 703">Basics of Systemic Bacteriology</p> <ul style="list-style-type: none"> <li data-bbox="379 734 1150 808">• Gram Positive Organisms: Morphology and infections caused by Staphylococcus, Streptococcus, Pneumococcus, Bacillus <li data-bbox="379 904 1150 978">• <u>Corynebacterium diphtheria (Morphology, Pathogenesis, Lab Diagnosis)</u> <li data-bbox="379 1072 1150 1146">• Anaerobes: Morphology and infections caused by all <u>Clostridia Pathogenesis and Lab Diagnosis of gsgangreen</u> <li data-bbox="379 1176 1075 1249">• Mycobacteria Morphology and infections caused by M. leprae, Atypical mycobacteria <li data-bbox="379 1279 1150 1352">• <u>Mycobacterium tuberculosis (Morphology, Pathogenesis, Lab Diagnosis)</u> <li data-bbox="379 1382 1075 1456">• Gram Negative Organisms: Morphology and infections caused by Gonococcus, Meningococcus <li data-bbox="379 1550 1059 1624">• E.Coli, Klebsiella, Proteus, Shigella- Morphology and infections caused <li data-bbox="379 1718 1107 1792">• Salmonella -Morphology, Pathogenesis, Lab Diagnosis of enteric fever <li data-bbox="379 1821 1150 1895">• Morphology and infections caused by Pseudomonas, yersinia, Haemophilus, Bordetella and Brucella <li data-bbox="379 1924 1027 1953">• <u>Vibrio (Morphology, Pathogenesis, Lab Diagnosis)</u> 	<p data-bbox="1182 674 1198 703">1</p> <p data-bbox="1182 734 1198 763">1</p> <p data-bbox="1182 860 1198 889">1</p> <p data-bbox="1182 985 1198 1014">1</p> <p data-bbox="1182 1111 1198 1140">1</p> <p data-bbox="1182 1299 1198 1328">1</p> <p data-bbox="1182 1359 1198 1388">1</p> <p data-bbox="1182 1420 1198 1449">1</p> <p data-bbox="1182 1480 1198 1509">1</p> <p data-bbox="1182 1541 1198 1570">1</p> <p data-bbox="1182 1601 1198 1630">1</p> <p data-bbox="1182 1662 1198 1691">1</p> <p data-bbox="1182 1722 1198 1751">1</p> <p data-bbox="1182 1783 1198 1812">1</p> <p data-bbox="1182 1843 1198 1872">1</p> <p data-bbox="1182 1904 1198 1933">1</p>	<p data-bbox="1353 1294 1437 1323" style="text-align: center;">12 hrs</p>

	<ul style="list-style-type: none"> • HBV Laboratory diagnosis. PEP • HAV, HCV, HEV: transmission, Pathogenicity, • Swine flu, Ebola Virus, Rabies: Dengue ,Rota virus Transmission Pathogenicity, 		
6.	<p>Basics of Parasitology</p> <ul style="list-style-type: none"> • Definition and explanation of various terms - Parasite, host, symbiosis, commensalism, Parasitism, Parasitology, 1 1 • Classes of parasites, Classes of hosts, Outline of laboratory diagnosis of parasitic diseases, 1 • General features of Protozoa- List of Common Protozoa & diseases caused 1 1 E. Histolytica- Morphology, Life cycle, Pathogenicity and Lab. Diagnosis 1 1 Plasmodium spp.- Morphology, Life cycle, Pathogenicity and Lab. Diagnosis 1 1 • General features of Helminths – Classification 1 • General features of Nematodes- Examples of nematodes - List the diseases caused, 1 Ascarislumbricoides - Morphology – Adult worm, Ova. Lesions, Clinical features & Lab. Diagnosis. 1 • General features of Cestodes - Examples of Parasites- List the diseases caused, 1 T. saginata, T. solium - Morphology –Adult worms, Ova Def. & Int. Host, Lesions, Lab diagnosis • General features of Trematodes - Examples of Parasites and list the diseases caused • Vectors- Definition, types, diseases transmitted 		10 Hrs
7.	<p>Applied Microbiology</p> <ul style="list-style-type: none"> • List of Organisms causing PUO 	1 1 1 1	6Hrs

	<ul style="list-style-type: none"> • List of Organisms causing Diarrhea • List of Organisms causing LRTI • List of Organisms causing Meningitis • List of Organisms causing UTI • List of Organisms causing STD 	1 1	
	Total		45 HRS

Unit no.	PRACTICAL TOPICS	Hours allotted
3.	Basics of Systemic Bacteriology <ol style="list-style-type: none"> 8. Gram positive cocci (Staph, Strepto, Pneumo) Grams staining and slides 9. Gram positive bacilli (C. diphtheriae, Clostridium species) 10. Mycobacterium species slides and ZN staining 11. Gram negative bacteria (Niesseriae species), Vibrio & Pseudomonas species 12. Enterobacteriaeaceae(E. Coli, Klebsiella, Proteus, Salmonella, Shigella) 13. Spirochetes 	12 hrs
4.	Basics of Mycology <ol style="list-style-type: none"> 7. General Introduction to Mycology 8. Laboratory diagnosis of fungal infections, grams staining for candida, Wet mount of common fungi like aspergillus, LPCB preparation 	04 Hrs
5.	Basics of Virology <ol style="list-style-type: none"> 1. General Introduction to Virology 2. Laboratory diagnosis of Viral infections 3. Human Immunodeficiency Virus & Hepatitis B. Virus Demo of rapid tests for HIV and Hepatitis B. Virus	06 Hrs
6.	Basics of Parasitology <ol style="list-style-type: none"> 1. General Introduction to Parasitology, Stool Examination 	08 Hrs

	<p>2. Laboratory diagnosis of Plasmodium species (Protozoa)</p> <p>3. Laboratory diagnosis of T. saginata & T. solium (Cestodes)</p> <p>4. Laboratory diagnosis of A. lumbricoides & A. deodenale (Nematodes)</p> <p>Demo of slides and specimens</p>	
	Total	30 HRS


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