



GUJARAT TECHNOLOGICAL UNIVERSITY
Master of Science (Integrated-Biotechnology)

Semester: I

Subject Name: Human Microbial Diseases

Subject Code: 1310405

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
4	0	0	4	70	30	0	0	100

Prerequisite:

Students have the basic knowledge about the different kind of pathogen. They aware about the infectious and non-infectious diseases.

Rationale:

Study of microbiology helps in gaining the knowledge of the diseases caused by microorganisms, which would help in discovery and development of antibiotics, medicines and vaccines for prevention and treatment of diseases.

Course Content:

Unit No.	Content	No. of Hours	Weightage (%)
1	Overview of Human Diseases Outline about process of infection, Infectious and non-infectious diseases, Deficiency diseases, occupational diseases, Incubation period, mortality rate, nosocomial infections, biomedical waste disposal	8	13
2	Epidemiology Principles and methods of Epidemiology, Air borne, water borne, Food borne and Sexually transmitted diseases. Preventive measures (mass immunization and herd immunity) and mode of action of antibiotics	10	17
3	Microbial Diseases, Diagnostics and treatment Respiratory, gastrointestinal, Nervous system, skin, eye, urinary tract diseases, Sexually transmitted diseases. Study of recent outbreaks of human diseases (SARS/ Swine flu/Ebola/Covid) – causes, spread and control. Mosquito borne disease – Types and prevention	12	20
4	Host – Microorganism Interaction Microorganism entry, colonization, invasion, outcome, and Prevention of Disease. Microbial Virulence factors and pathogenicity Island. Epidemiology and investigation of recent pandemics (SARS). Antimicrobial resistance and Detection (MRSA/MDRTB).	15	25
5	Oncogenesis related microbes Mechanism of oncogenesis by microbes, Prevention and control of oncogenesis, Vaccine immunization and chemotherapeutic remedies and treatment of oncogenic infections	15	25
Total Hours:		60	



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Textbook:

1. Amanullah M (2012) Medical Biochemistry and Biotechnology LAP Lambert Academic Publishing
2. Orlicki R, Cieñciala C, Krylova LP, Pielichowski J, and Zaikov GE. Pharmaceutical and Medical Biotechnology: New Perspectives Nova publishers UK Ed.2013.

Reference Books:

1. Wilson BA, Salyers AA. Bacterial Pathogenesis: A molecular approach ASM Press, 3rd Edition. 2011.
2. Delves PJ, Martin SJ, Burton DR, Roitt IM Roitt's Essential Immunology Wiley-Blackwell 12th Edition. 2011.

Course Outcomes:

No.	Course Outcomes	RBT Level*
1	Evaluate the biology of various diseases	UN
2	Discover various diagnostic methods and imaging techniques	UN,RM,AP
3	Assess disease etiology, respective diagnosis,	UN,RM,AP,AN

*RM: Remember, UN: Understand, AP: Apply, AN: Analyze, EL: Evaluate, CR: Create

Suggested Course Practical List:

Not Applicable

List of Laboratory/Learning Resources Required

1. <https://www.futurelearn.com/courses/human-disease-understanding-causes-of-disease>
2. <https://www.edx.org/course/population-health-disease-prevention-and-managemen>