MBY1FM 105-MICROORGANISMS IN DAILY LIFE

Programme	B. Sc. Microbiology				
Course Code	MBY1FM 105				
Course Title	Microorganisms in Daily life				
Type of Course	MDC				
Semester	I				
Academic Level	100-199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours
	3	3	-	-	45
Pre-requisites	Nil				
Course Summary	This course offers an introduction to the invisible world of microorganisms and their profound effects on our daily lives. From the food we eat to the environment we inhabit, microorganisms play essential roles that are often overlooked. Students will gain an understanding of the basic biology of microorganisms, their ecological importance, and their applications in medicine, industry, and environmental management.				

Course Outcomes (CO):

CO	CO Statement	Cognitive Level*	Knowledge Category#	Evaluation Tools used
CO1	Describe the fundamental characteristics and classifications of microorganisms.	U	F	Internal Exam, End Semester Exam
CO2	Explain the role of microorganisms in human health, including their impact on disease and immunity.	U	C	Internal Exam, Assignments
CO3	Discuss the beneficial applications of microorganisms in food production, biotechnology, and industry.	U	C	Assignments, End Semester Exam
CO4	Evaluate the environmental impact of microorganisms in ecosystems, biodegradation, and waste management.	An	C	Internal Exam, End Semester Exam
CO5	Identify and analyze the challenges and future prospects of microbial applications in addressing global issues.	An	C	Assignments, End Semester Exam

* - Remember (R), Understand (U), Apply (Ap), Analyse (An), Evaluate (E), Create (C)
# - Factual Knowledge(F) Conceptual Knowledge (C) Procedural Knowledge (P) Metacognitive Knowledge (M)

Detailed Syllabus:

Module	Unit	Content	Hrs (33+12)	Marks (50)
I	**Introduction to Microbiology**		**5**	**10**
	1	The Microbial World: An overview of microorganism types and their roles.		
	2	Cellular Structures of Microorganisms: Differences between prokaryotes and eukaryotes.		
	3	Basic Microbial Genetics: Introduction to microbial DNA and gene functions.		
	4	Microbial Growth: Factors affecting microbial growth and reproduction.		
	5	Environmental Microbiology: Roles of microorganisms in ecosystems.		
II	**Microorganisms and Human Health**		**10**	**15**
	6	Pathogenic Microorganisms: Bacteria, viruses, and fungi that cause diseases.		
	7	Antibiotics and Antibiotic Resistance: Mechanisms and implications.		
	8	The Human Microbiome: Beneficial effects of microorganisms on human health.		
	9	Immunology Basics: How the body defends itself against microbial infections.		
	10	Vaccines: Role of microorganisms in vaccine development.		
	11	Emerging Infectious Diseases: New challenges in microbial infections.		
III	**Applied Microbiology**		**10**	**15**
	12	Food Microbiology: Microorganisms in food production and spoilage.		
	13	Industrial Microbiology: Use of microbes in the production of chemicals and pharmaceuticals.		
	14	Agricultural Microbiology: The role of microbes in agriculture and soil fertility.		
	15	Bioenergy: Microbial production of biofuels.		
	16	Bioremediation: Microorganisms used in pollution control and cleanup.		
	17	Bioremediation of oil spills and heavy metal contamination		
IV	**Ethical and Social Implications of Microbiology**		**8**	**10**
	18	Biotechnology in Microbiology: Genetic modification of microorganisms.		

	19	Bioethics: Ethical issues in the manipulation of microbial life.		
	20	Public Health: Microbiology in the context of public health policy.		
	21	Microorganisms in Biowarfare: Historical and current perspectives.		
	22	Future of Microbiology: Innovations and upcoming research fields.		
V	**Open Ended**		**12**	
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