



ESTD: 1984

ADITYA DEGREE COLLEGE

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CO - PO MAPPING - M.Sc., MICROBIOLOGY

SEMESTER	COURSE NAME	CO	COURSE OUTCOMES	PROGRAMME OUTCOMES															
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
I	GENERAL MICROBIOLOGY	CO1	Acquire adequate knowledge and leadership skills for a successful career	2		3	2						3	2				3	
		CO2	Analyze and solve biology based problems	2		3	2	2					2	3				2	
		CO3	Cooperate with each other to solve problems with creative thinking	2	2	3	3	2			3			2					2
		CO4	Acquire practical skills independently as well as to analyse & interpret data	3		3	2	3	2		3		2	3			2		2
		CO5	Adequate knowledge to use information and conclude microbial activities.	3		3	2	3	2		3		3	3					2
		CO6	Build and develop pure cultures of bacteria and fungi.	3	3	3			3	2	3			2			2	2	
	BACTERIOLOGY AND VIROLOGY	CO1	Identify and enumerate bacterial cells	3		3	2	2			3	3						3	3
		CO2	Differentiate and interpret bacterial species.	2	2	2			2		3		2	3				2	3
		CO3	Characterize and select microbial species.	3		2		2	2		2	2	2						2
		CO4	Analyse and compare differences between bacteria and viruses.	2		3	2		3	2				2				3	2
		CO5	Conclude and convenience the use of microorganisms.	2	2	2	3		3		3		2	3				2	3
		CO6	Develop and invent microbial valuable products like SCP.	3		3	2	2			3	2						2	3
	BIOMOLECULES	CO1	To understand the importance of biomolecules in living organisms			3	2										3		
		CO2	Effects of their alterations in diseases	2		3	2	2					2	3				2	

	CO	COURSE OUTCOMES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
				CO3	Expertise to the student for analysis of any biological or non-biological sample	3		2	3		2		3		2	3	
	CO1	Acquire adequate knowledge and leadership skills for a successful career	2	2		3		2		3		3	3			2	3
	CO2	Analyze and solve biology based problems	3		3	2	2			3	2					2	3
	CO3	Cooperate with each other to solve problems with creative thinking	2	2		3		2		3		2	3			2	3
	CO4	Acquire practical skills independently as well as to analyse & interpret data	3	3	3		2		2	3			2			2	
	CO5	Adequate knowledge to use information and conclude microbial activities.	2		3	2						3	2		3		3
	CO3	Apply the principles of HPLC,GC for separation of molecules	2		3	2	2					2	3			2	
	CO4	Compare the separation techniques like ELECTROPHORESIS	2	2	2	3		2		3		2	3			2	3
	CO5	Evaluate the separations done by affinity chromatography and outer current separation techniques	2	2	2	3		2		3		2	3			2	3
	CO6	Formulate the principle of liquid partition chromatography, super fluid chromatography	3		3	2	2			3	2				3	2	3
II	CO1	Knowledge on microbial nutrition and bacterial growth	2	2		3		2		3		2	3			2	3
	CO2	Explanation of metabolism of carbohydrates, amino acids and proteins.	3		3	2	2			3	2					2	3
	CO3	Differentiate the aerobic and anaerobic respiration process.	2	2		3		2		3		2	3			2	3
	CO4	Characterization of purines and pyrimidine,	2	2	3		2	3	2				2		3	3	2
	CO5	To understand the role of vitamins.	2		2	3		2		3		2	3			2	3
	CO6	Summarization of antibiotics and its importance.	3		3	2	2			3	2					2	3
	CO1	Discuss about structural and functional aspects of cell, the basic unit of life, and its different organelles.	3		3		3	2		3		3	3				2
	CO2	Knowing the components of cells and fundamental to all biological sciences.	3	3	3		2	3	2	3			2			2	
	CO3	Understand cell signalling and processes of cell death and cellular aging.	3		3	2	2			3	2				2	2	3
	CO4	Acquire the basis of cyclic events of cell division and types of cell division.	2	2	2	3		2		3		2	3			2	3

	CO	COURSE OUTCOMES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
				CO5	Learning about the importance of enzymes and enzyme catalysed reactions.	2		3	3	2	3	2				2			3
	CO6	Illustrating the mechanism and regulation of biochemical reactions in living systems.	2	2	2	3		2		3		2	3			2	3		
MOLECULAR AND MICROBIAL GENETICS	CO1	Learn about cell division, genetic materials, their structure and types.	3		3	2	2			3	2					2	3		
	CO2	Understanding the mechanism of central dogma of DNA.	3		3	2	2			3	2				3	2	3		
	CO3	To learn about gene concepts, genetic code, gene expression, gene regulation and also learn about mutation.	2		3	2	2					2	3			2			
	CO4	To distinguish genetic regulatory mechanism at different levels.	2		2	3		2		3		2	3			2	3		
	CO5	To know transposons.	2	2		3		2		3		2	3			2	2		
	CO6	Analysis of tetrads and its process.	3		3	2	2			3	2					2	3		
	CO1	Overview on the immune system including organs, cells and receptors.	2	2	2	3		2		3		2	3		2	2	3		
	CO2	Discuss about molecular basis of immunology.	3		3	2	2			3	2					2	2		
IMMUNOLOGY	CO3	Develops an appreciation for principles of immunology.	2		2	3		2		3		2	3			2	3		
	CO4	Analyze the applications in treating human diseases.	2	2		3	2	3	2			2				3	2		
	CO5	Characterize about antigen recognition, hypersensitivity reaction, antigen-antibody reactions.	3	3	3	2		2		3		2	3			2	3		
	CO6	To explain the production and importance of vaccine.	2		3	3	2		2				2		2	3	2		
III	MOLECULAR MICROBIOLOGY	CO1	Deals with interactions among various systems of the cell	3		2	2	3	2		1		3	3			2		
		CO2	Explain the relationship between DNA, RNA and proteins and learning how these are regulated.	3	3	3		2	3	2	3			2			2		
		CO3	Explain about significant molecular and cell-based methods.	2		3	2							3	2			3	
		CO4	Design and implement experimental procedures using relevant techniques.	2		3	2	2						2	3			2	
		CO5	Describing about different uses of genes- ONCO genes.	2	2	3	3		2		3		2	3			2	3	
		CO6	Understanding about regulation mechanism.	2	2	3	3		2		3		2	3		2	2	2	
GENETIC ENGINEERING	CO1	Explain RDNA technology techniques and their application in the field of genetic engineering	3		3	2	2			3	2					2	3		
	CO2	Characterization of plasmids, vectors and gain knowledge on the construction of cDNA libraries	2	2		3		2		3		2	3			2	2		

	CO	COURSE OUTCOMES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
				CO3	Illustration of gene manipulation, gene expression, etc	3		3	2	2			3	2					2	3
	CO4	Description and importance about nucleic acid technology.	3		2	2		2		3		3	3			2		2		
	CO5	Summarization and comparison of DNA and protein micro array.	3	3	3		2		2	3			2			3	2			
	CO6	Usage of rDNA technology in different phase.	2		3	2						3	2					3		
BIOINFORMATICS, MICROBIAL PROTEOMICS AND GENOMICS	CO1	Define the concepts in bioinformatics.	2		3	2	2					2	3				2			
	CO2	Apply basic principles of biology, computer science and mathematics to address complex biological problems.	2		2	3		2		3		2	3				2	3		
	CO3	Integration and applications of OMIC technology.	3	3		2		2		3		3	3				2	3		
	CO4	To characterize and analysis of competitional methods-BLAST,PROSITE,	2		2	3		2		3		2	3				2	2		
	CO5	To understand the bacterial and biodegradation pathways.	3		3	2	2			3	2						2	3		
	CO6	Explaining about the concepts of laboratory-on-a-chip, OMIC tools.	2	2		3		2		3		2	3				2	3		
MEDICAL MICROBIOLOGY	CO1	Discuss the interactions between human and microbes, diseases caused by microbes.	3		3	2	2			3	2						2	2		
	CO2	Learn about diagnosis of various microbial diseases	2	2		3		2		3		2	3			2	2	3		
	CO3	Learn about culture, collection, handling and transport of clinical samples	2		2	3		2		3		2	3				2	3		
	CO4	To explain about anti bacterial and anti fungal drugs and their role.	3		3	2	2			3	2					3	2	3		
	CO5	Understanding about drug resistance in bacteria.	2	3		3		2		3		2	3				2	2		
	CO6	Analyze able to identify diseases and understand the treatment plan	3		3	2	2			3	2					2	2	3		
IV	FERMENTATION TECHNOLOGY AND INDUSTRIAL MICROBIOLOGY	CO1	To exploit microbes for manufacturing of industrial products.	2	2		3		2		3		2	3			2	3		
		CO2	Synthesize various biochemical processes to obtain products such as chemicals, vaccines, etc	3		2		3	2		3		3	3					2	
		CO3	To know the concept of IPR.	3	3	3		2	3	2	3			2				2		
		CO4	To learn about industrial production of alcoholic beverages.	2		3	2						3	2						3
		CO5	The concept of preservation techniques and biochips.	2		3	2	2					2	3				2		
		CO6	Formulation of biofuels like methane gas, bioethanol, etc.	2	2		3		2		3		2	3			2	2	3	
	CO1	Impart knowledge in soil microflora	2		3	2	2					2	3			3	2			

	CO	COURSE OUTCOMES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
ENVIRONMENTAL MICROBIOLOGY	CO2	Learn about water and waste water treatment process.	2	2		3		2		3		2	3			2	3	
	CO3	To learn about microbial associations with soil and other living organisms.	2	2	2			2		3		2	3			2	3	
	CO4	Solid waste disposal and control soil pollution	3		3		2			3	2					3	2	3
	CO5	To understand about biodiversity			3	2												
	CO6	To analyze air spores and its techniques	2		3	2	2						2	3			2	
	FOOD AND AGRICULTURAL MICROBIOLOGY	CO1	Concepts of food processing.	2	2	2	3		2		3		2	3			2	3
CO2		Microbiology of diary products and fermented foods	2	2	2	3		2		3		2	3			2	3	
CO3		Examination of quality of food	3		3	2	2			3	2					2	2	3
CO4		To aware about principles of food preservation	2	2	2	3		2		3		2	3				2	3
CO5		Knowing about BIS and US FDA rules	3		2	2	3	2		3		3	3					2
CO6		To produce biofertilizers and biopesticides	3	3	3		2	3	2	3			2			3	2	
BIostatistics AND RESEARCH METHODOLOGY	CO1	Basics of statistics and applications in biology	2		3	2						3	2			2		3
	CO2	Analysis and Predictions , Bayes theorem	2		3	2	2					2	3				2	
	CO3	Characterization of errors, Chi square test	2	2	2	3		2		3		2	3				2	3
	CO4	Evaluation of data and probability	2		3	2						3	2					3
	CO5	Understanding of manuscript writing for research project	2		3	2	2					2	3				2	
	CO6	Acquire the knowledge of project proposal	2	2	2	3		2		3		2	3			3	2	3