

Academic Year	2020-21
----------------------	----------------

**B.P.H.E. Society's
Ahmednagar College, Ahmednagar
Internal Quality Assurance Cell
CO, PO, and PSO Attainment Sheet**

Department Name	Biotechnology
Program Name	M.Sc.
Program Outcomes(PO)	
PO1	To understand structure-functional relation of protein, genome & drugs using bioinformatics tools.
PO2	To study plant transformation using genetic engineering for developing better varieties of economically & medicinally important.
PO3	Understanding the mechanism of cloning of micro-organisms, plants & animal cells through genetic engineering & tissue culture tools
PO4	To develop awareness about patenting & intellectual property rights in the field if life science.
PO5	To understand breeding mechanism in plants & livestock.
PO6	To study ultrastructure, classification & cultivation of viruses
PO7	To aware students about emerging & re-emerging viruses diseases
PO8	To know about stem cells & its applications in medical field
PO9	To study differential expression of genes in normal & diseased individuals
PO10	To understand role of biotechnology various fields for betterment of life
PO11	To help student build-up a progressive and successful career
PO12	The student will be able to identify, formulate and solve the issues related to biotechnology through in-depth analytical and critical
Program Specific Outcome(PSO)	
PSO1	To help the students to build interdisciplinary approach.
PSO2	To empower students to excel in various research fields of Life Sciences.
PSO3	To inculcate sense of scientific responsibilities and social and environment awareness.

Academic Year : 2020-21

Class	M.Sc. (Biotechnology) Part-I	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT- 101		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Advanced Biological Chemistry	CO1	1	2	1	2	1	2	3	1	2	1	2	1	2	2	2
Semester No	I	CO2	2	1	2	1	2	1	1	2	1	2	1	2	1	1	1
Teacher Name	Komal Sonawane	CO3	1	3	1	1	1	2	2	1	2	1	2	1	2	1	2
Course Outcomes		CO4	3	1	1	1	2	1	1	1	1	2	1	2	1	2	1
	A strong understanding of fundamentals of biochemical process at an advanced level.	CO5	1	1	2	2	1	2	1	2	1	1	2	1	1	1	2
		Average	1.60	1.60	1.40	1.40	1.40	1.60	1.60	1.40	1.40	1.40	1.60	1.40	1.40	1.40	1.60
	Better understanding of major thrust areas of the discipline																
	Knowhow on current developments in the biochemical research																
	Capacity to identify, analyze and design safe experimental process to provide efficient solutions by fair interpretation of data																
	Perfect gain insight into biochemical research ethics for production of quality research and publication.																

Class	M.Sc. (Biotechnology) Part-I	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT- 102		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Cell & Molecular Biology	CO1	2	1	1	2	2	2	3	1	2	1	2	1	2	2	1
Semester No	I	CO2	2	1	2	1	2	1	1	2	1	2	1	2	2	1	1
Teacher Name	Rajashri Bhope	CO3	1	3	2	1	1	2	2	1	2	2	2	1	2	1	2

Course Outcomes		CO4	2	2	1	1	2	1	1	2	1	2	1	2	1	2	1
CO1	The course has been devised to familiarize students with Molecular Biology which chiefly deals with interactions among various systems of the cell, including those between DNA, RNA and proteins and learning how these are regulated	CO5	2	1	2	2	2	2	1	2	1	1	2	1	2	2	1
CO2	To gain an understanding of chemical and molecular processes that occurs in and between cells	Average	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.40	1.60	1.60	1.40	1.80	1.60	1.20
CO3	To gain insight into the most significant molecular and cell-based methods used today to expand our understanding of biology.																
CO4	Will be able to design and implement experimental procedures using relevant techniques																
CO5	Build knowledge of Cell structure and function in detail.																

Class	M.Sc. (Biotechnology) Part-I	Course Outcomes	Program Outcomes												PSOs		
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Code	MBT- 103	CO1	2	1	1	2	2	2	3	1	2	1	2	1	2	2	1
Subject Name	Genetics & Immunology	CO2	2	1	2	1	2	1	1	2	1	2	1	2	2	1	1
Semester No	I	CO3	1	3	2	1	1	2	2	1	2	2	2	1	2	1	2
Teacher Name	Katke P. M & Gavhane A J.	CO4	2	2	1	1	2	1	1	2	1	2	1	2	1	2	1
Course Outcomes	Knowledge regarding mutation: Causes, agents that are responsible and role in cancer and cell death.	CO5	2	1	2	2	2	2	1	2	1	1	2	1	2	2	1
	Thorough knowledge of immunity and the factors responsible for developing immunity and preventing infection	Average	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.40	1.60	1.60	1.40	1.80	1.60	1.20
	Development of diseases and its prevention																
	Different techniques involved in causing mutation and analyzing antigen and antibody in testing.																

CO5 To introduce and familiarize the undergraduate students with overall concept of immune system, action mechanism and applications in research and biomedical field.

Class	M.Sc. (Biotechnology) Part-I	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT- 104		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Laboratory Course I - Advanced Biological Chemistry, Cell & Molecular Biology, Immunology	CO1	2	1	1	2	2	2	3	1	2	1	2	1	2	2	1
Semester No	I	CO2	2	1	2	1	2	1	1	2	1	2	1	2	2	1	1
Teacher Name	Sonawane, Katke, Gavhane & Galande	CO3	1	3	2	1	1	2	2	1	2	2	2	1	2	1	2
Course Outcomes		CO4	2	2	1	1	2	1	1	2	1	2	1	2	1	2	1
CO1	Study and analyze various aspects of Biotechnology with respect to environment	CO5	2	1	2	2	2	2	1	2	1	1	2	1	2	2	1
CO2	Understanding and assimilating the specific concepts and terminology of environmental biotechnology.	Average	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.40	1.60	1.60	1.40	1.80	1.60	1.20
CO3	Finding and managing information from various sources.																
CO4	Describing the scientific bases that are applied by environmental biotechnology.																
CO5	Learning about water resources and analyzing the waste water as well as solid waste management techniques.																

Class	M.Sc. (Biotechnology) Part-I	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT- 105 T		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Environmental Biotechnology (Theory)	CO1	2	1	1	2	2	2	3	1	2	1	2	1	2	2	1
Semester No	I	CO2	2	1	2	1	2	1	1	2	1	2	1	2	2	1	1
Teacher Name	Jyotsna Galande	CO3	1	3	2	1	1	2	2	1	2	2	2	1	2	1	2
Course Outcomes		CO4	2	2	1	1	2	1	1	2	1	2	1	2	1	2	1
CO1	Study and analyze various aspects of Biotechnology with respect to environment	CO5	2	1	2	2	2	2	1	2	1	1	2	1	2	2	1

CO2	Understanding and assimilating the specific concepts and terminology of environmental biotechnology.	Average	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.40	1.60	1.60	1.40	1.80	1.60	1.20
CO3	Finding and managing information from various sources.																
CO4	Describing the scientific bases that are applied by environmental biotechnology.																
CO5	Learning about water resources and analyzing the waste water as well as solid waste management techniques.																

Class	M.Sc. (Biotechnology) Part-I	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT- 105 P		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Environmental Biotechnology (Practical)	CO1	2	1	1	2	2	2	3	1	2	1	2	1	2	2	1
Semester No	I	CO2	2	1	2	1	2	1	1	2	1	2	1	2	2	1	1
Teacher Name	Jyotsna Galande	CO3	1	3	2	1	1	2	2	1	2	2	2	1	2	1	2
Course Outcomes		CO4	2	2	1	1	2	1	1	2	1	2	1	2	1	2	1
CO1	student will able to study pollution indicator plants in terms of morphology and anatomy	CO5	2	1	2	2	2	2	1	2	1	1	2	1	2	2	1
CO2	Student will able to study Microbial (Bacterial, Algal and Fungal) community estimation	Average	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.40	1.60	1.60	1.40	1.80	1.60	1.20
CO3	Student will able to study polluted and unpolluted soil by physical and chemical properties																
CO4	Student will able to Test genotoxicity of water sample																
CO5	Student will able to study Quadrante method for plants																

Class	M.Sc. (Biotechnology) Part-I	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT-201		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Genetic Engineering	CO1	2	1	1	2	2	2	3	1	2	1	2	1	2	2	1
Semester No	II	CO2	2	1	2	1	2	1	1	2	1	2	1	2	2	1	1
Teacher Name	Bhople R .V.	CO3	1	3	2	1	1	2	2	1	2	2	2	1	2	1	2
Course Outcomes		CO4	2	2	1	1	2	1	1	2	1	2	1	2	1	2	1

CO1	The students will have knowledge of tools and strategies used in genetic engineering.	CO5	2	1	2	2	2	2	1	2	1	1	2	1	2	2	1
CO2	Understanding of applications of recombinant DNA technology and genetic engineering. from academic and industrial perspective	Average	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.40	1.60	1.60	1.40	1.80	1.60	1.20
CO3	Demonstrate the ability to design recombinant molecules and apply information extracted from various sources.																
CO4	The students will have knowledge of Molecular techniques and genome editing technologies																
CO5	Can use and apply the knowledge of genetic engineering in problem solving and in practice																

Class	M.Sc. (Biotechnology) Part-I	Course Outcomes	Program Outcomes												PSOs			
Subject Code	MBT-202		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Bacteriology and Virology	CO1	2	1	1	2	2	2	3	1	2	1	2	1	2	2	1	
Semester No	II	CO2	2	1	2	1	2	1	1	2	1	2	1	2	2	1	1	
Teacher Name	Gavhane A. J.	CO3	1	3	2	1	1	2	2	1	2	2	2	1	2	1	2	
Course Outcomes		CO4	2	2	1	1	2	1	1	2	1	2	1	2	1	2	1	
	CO1	To understand Taxonomy and Diversity of Bacteria	CO5	2	1	2	2	2	2	1	2	1	1	2	1	2	2	1
	CO2	To have Ultrastructure of Bacteria and Archea	Average	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.40	1.60	1.60	1.40	1.80	1.60	1.20
	CO3	The students will learn about extremophiles,adaptations in extremophiles, applications in biotechnology																
	CO4	This course emphasis on role of bacteria in medial field,public health,agriculture and as biofuel and bisurfactant																
	CO5	The students will learn viruses,morphology,classification,replication,cultivation and dignosis. It also empasis on animal,plant and poultry viruses																

Class		M.Sc. (Biotechnology) Part-I		Program Outcomes												PSOs		
Subject Code	MBT-203	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Plant Biotechnology	CO1	2	1	1	2	2	2	3	1	2	1	2	1	2	2	1	
Semester No	II	CO2	2	1	2	1	2	1	1	2	1	2	1	2	2	1	1	
Teacher Name	Galande J. S.	CO3	1	3	2	1	1	2	2	1	2	2	2	1	2	1	2	
Course Outcomes	Knowledge of developing PTC laboratory Roles of hormones in plant growth and regulation Micropropagation of ornamental plants Learn applications of transgenic plants Establish different types of plant cultures.	CO4	2	2	1	1	2	1	1	2	1	2	1	2	1	2	1	
		CO5	2	1	2	2	2	2	1	2	1	1	2	1	2	2	1	
		Average	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.60	1.40	1.60	1.60	1.40	1.80	1.60	1.20
		CO3																
		CO4																
CO5																		

Class		M.Sc. (Biotechnology) Part-I		Program Outcomes												PSOs		
Subject Code	MBT-204	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Laboratory Course II - Genetic Engineering, Bacteriology and Virology, Plant Biotechnology	CO1	2	1	1	2	2	2	3	1	2	1	2	1	2	2	1	
Semester No	II	CO2	2	1	2	1	2	1	1	2	1	2	1	2	2	1	1	
Teacher Name	Bhope, Galande, Gavhane, Katke	CO3	1	3	2	1	1	2	2	1	2	2	2	1	2	1	2	
Course Outcomes	The student are able to isolate and identify the bacteria from nature.the students will aquire skill for cultivation techniques to islate differnent kinds of bacteria and idetify upto genus level. Understanding of tools and techniques involved in molecular cloning The morphology, cultural, biochemical and other biological properties and characteristics of medically important bacteria. The mechanism of virulence and pathogenesis and pathology.	CO4	2	2	1	1	2	1	1	2	1	2	1	2	1	2	1	
		CO5	2	1	2	2	2	2	1	2	1	1	2	1	2	2	1	
		Average	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.60	1.40	1.60	1.60	1.40	1.80	1.60	1.20
		CO3																
CO4																		

CO5 To develop an understanding about practical aspects of components of immune system as well as their function

Class	M.Sc. (Biotechnology) Part-I	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT-206		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Medical Biotechnology	CO1	1	2	2	1	2	1	3	2	2	1	2	2	1	2	2
Semester No	II	CO2	2	1	2	3	2	1	1	2	1	2	1	2	2	1	1
Teacher Name	Bhople R .V.	CO3	1	3	2	1	1	2	2	1	2	2	2	1	2	1	2
Course Outcomes		CO4	2	2	1	2	2	1	1	2	1	2	1	2	1	2	1
CO1	Students after completing this course can become entrepreneurs in the most demanding sector of medical biotechnology such as diagnostics, drug designing, stem cell biology etc.	CO5	2	1	2	2	2	2	1	2	1	1	2	1	2	2	1
CO2	Students will develop an ability to identify, organize and answer problems in Medical Biotechnology Students will develop an ability to use skills and modern technological tools necessary for medical biotechnological practices	Average	1.60	1.80	1.80	1.80	1.80	1.40	1.60	1.80	1.40	1.60	1.60	1.60	1.60	1.60	1.40
CO3	Perfrom independent as well as team work to accomplish lab based tasks.																
CO4	Become a part of mission-Skill India- to develop researcher and scientists to uncover advance biology problems.																
CO5	Hands-on training and mandatory research projects will help our students by providing knowledge and technical experience of problem-solving in a research environment																

Academic Year : 2020-21

Class	M.Sc. (Biotechnology) Part-II	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT-301		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Animal & Stem Cell technology	CO1	2	2	1	2	1	1	3	1	2	1	2	2	1	2	1
Semester No	III	CO2	2	1	2	1	2	2	1	2	1	2	1	2	1	2	2
Teacher Name	Katke P.M.	CO3	1	3	2	2	1	2	2	2	2	1	2	1	2	1	2
Course Outcomes		CO4	2	2	2	1	2	3	1	2	1	2	1	2	3	2	1
	CO1	CO5	3	1	2	2	1	2	1	2	2	1	2	1	2	3	2
	CO2	Average	2.00	1.80	1.80	1.60	1.40	2.00	1.60	1.80	1.60	1.40	1.60	1.60	1.80	2.00	1.60
	CO3																
	CO4																
	CO5																

Course contains introduction of Tissue/Cell Culture and techniques which includes various systems of tissue cultures.
it also include Establishing primary cell culture, Organ culture and cell lines with their Methodology.

program contains Stem cells technology and its applications
Transgenic animal and their strategies gives broad ideas to students for experimental studies.

program also includes Study of animal husbandry and their application

Class	M.Sc. (Biotechnology) Part-II	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT-302		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Bioprocess engineering	CO1	2	2	1	2	1	1	3	1	2	1	2	1	2	2	2
Semester No	III	CO2	2	1	2	1	2	2	1	2	1	2	2	2	1	2	3
Teacher Name	Gavhane A. J.	CO3	1	3	1	2	1	2	2	1	2	1	2	1	2	1	2

Course Outcomes		CO4	2	1	2	2	2	3	1	2	1	2	1	2	3	2	1
CO1	This course empasis various aspects of bioprocess engineering, concept of fermentation and various types,bioprocess,Role of boitechnology in developement of bioprocess	CO5	2	2	2	2	3	2	1	2	2	1	2	3	2	1	2
CO2	The student will learn about methods of screening and strain improvment programs for industrially imporatant microoranisms and their preservation methods,inoculu developent programs	Average	1.80	1.80	1.60	1.80	1.80	2.00	1.60	1.60	1.60	1.40	1.80	1.80	2.00	1.60	2.00
CO3	The student will learn about methods of screening and strain improvment programs for industrially imporatant microoranisms and their preservation methods,inoculu developent programs																
CO4	This course empasis on selection of media components ,media formulation, optimization and sterilization methods for media ,fermenter and air																
CO5	he students will understand about design of bioractors and parts and various types .It helps to know about monitring and control various parameters to monitor and control fermentation process It gives knowledge about all upstream and downstream processing. the students also learn about QC and QA aspect and product recovery,purification and testing with various examples.																

Class		M.Sc. (Biotechnology) Part-II	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT-303			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Bioinformatics & Biostatistics	CO1	2	2	1	2	1	1	3	1	2	3	2	3	2	2	2	
Semester No	III	CO2	2	2	2	1	2	2	1	2	1	2	1	2	1	2	2	
Teacher Name	Katke P. M.	CO3	1	3	1	2	1	2	2	1	2	1	2	1	2	1	2	
Course Outcomes		CO4	2	2	2	1	2	3	1	2	1	2	1	2	3	2	1	
CO1	Course objective is to learn Major Bioinformatics Resources and Biological databases and Basic Concepts in Biological sequence Analysis Student also learn Structural Bioinformatics, Pharmacophore modelling and Chemoinformatics and Molecular Modeling.	CO5	2	1	2	2	3	2	1	3	2	1	2	1	2	1	2	
CO2	Student also learn Biostatistic in this course which includes Sampling, distribution and presentation, Hypothesis Testing (with biological examples) and Design, correlation and regression analysis.	Average	1.80	2.00	1.60	1.60	1.80	2.00	1.60	1.80	1.60	1.80	1.60	1.80	2.00	1.60	1.80	
CO3	Student also learns to use several Statistical Methods such as Analysis of variance table (ANOVA), Post hoc Tests, Tukey's test for pairwise comparison of treatments , Dunnet's test for comparison of treatment means with control, Duncan's multiple range test, Mann-Whitney U test																	
CO4	Students get aquatinted to the computational aspect of Biotechnology																	
CO5																		

Class		M.Sc. (Biotechnology) Part-II	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT-304			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3

Subject Name	Laboratory Course IV- Animal Biotechnology, Bioprocess engineering & Bioinformatics & Biostatistics	CO1	3	2	1	2	1	1	3	1	2	1	2	1	2	1	2
Semester No	III	CO2	2	1	2	1	2	2	1	2	1	2	1	2	1	2	3
Teacher Name	Katke, Gavhane and Galande	CO3	1	3	1	2	1	2	2	1	2	1	2	1	2	1	2
Course Outcomes		CO4	2	1	2	1	2	3	1	2	1	2	1	2	3	2	1
CO1	The students will able to carry out screening and preservation of industrially important microorganisms.	CO5	1	2	2	2	2	2	1	2	1	2	2	1	2	1	2
CO2	The student will carry out fermentation at laboratory scale and product assay	Average	1.80	1.80	1.60	1.60	1.60	2.00	1.60	1.60	1.40	1.60	1.60	1.40	2.00	1.40	2.00
CO3	They will also able to formulate and optimize medium for fermentation																
CO4	The student can produce fermentation product at laboratory scale and carry out qualitative and quantitative testings of the product.																
CO5	Course objective is to learn Major Bioinformatics Resources and Biological databases and Basic Concepts in Biological sequence Analysis																

Class	M.Sc. (Biotechnology) Part-II	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT-306 T		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Agricultural Biotechnology (Theory)	CO1	2	1	3	2	1	1	3	1	2	1	2	3	2	2	2
Semester No	III	CO2	2	1	2	1	2	2	1	2	1	2	1	2	1	2	2
Teacher Name	Galande J.S.	CO3	1	3	1	2	1	2	2	1	2	1	3	1	2	1	2
Course Outcomes		CO4	2	1	2	3	2	3	1	2	1	2	1	2	3	2	1
CO1	The students will learn about applications of biotechnology in agriculture	CO5	3	1	2	2	1	2	1	2	2	3	2	1	2	3	2
CO2	The student will learn about plant bioreactor and use	Average	2.00	1.40	2.00	2.00	1.40	2.00	1.60	1.60	1.60	1.80	1.80	1.80	2.00	2.00	1.80

CO3	The student also learn about production of biofertilizers, plant growth promoter and formulations
CO4	Understand the gene manipulation techniques Knowledge to plants
CO5	Analyze the different applications of genetically modified organisms related issues

Class	M.Sc. (Biotechnology) Part-II	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT-306 P		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Agricultural Biotechnology (Practical)	CO1	2	2	2	2	1	1	3	1	2	1	2	1	1	2	1
Semester No	III	CO2	2	1	2	1	2	2	1	2	1	2	1	2	1	2	2
Teacher Name	Galande J.S.	CO3	1	3	1	2	1	2	2	1	2	1	2	1	2	1	2
Course Outcomes		CO4	2	1	2	1	2	3	1	2	1	2	1	2	3	2	1
CO1	The students will learn about applications of biotechnology in agriculture	CO5	2	1	2	1	1	2	2	3	2	1	2	1	2	1	3
CO2	The student will learn about plant bioreactor and use	Average	1.80	1.60	1.80	1.40	1.40	2.00	1.80	1.80	1.60	1.40	1.60	1.40	1.80	1.60	1.80
CO3	The student also learn about production of biofertilizers, plant growth promoter and formulations																
CO4	Understand the gene manipulation techniques Knowledge to plants																
CO5	Analyze the different applications of genetically modified organisms related issues																

Class	M.Sc. (Biotechnology) Part-II	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT-401		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Genomics and Proteomics	CO1	1	1	1	2	2	2	3	1	2	3	2	1	2	1	2
Semester No	IV	CO2	2	1	2	1	2	2	1	2	1	2	1	2	1	2	2
Teacher Name	Bhople & Katke	CO3	1	3	1	2	1	2	2	1	2	1	2	1	2	1	2

Course Outcomes		CO4	2	1	2	1	2	3	1	2	1	2	1	2	3	2	1
CO1	Students learn about Genomics, Transcriptomics, Microarray and application of genomics	CO5	2	3	2	2	1	2	1	2	2	1	2	2	2	1	1
CO2	In proteomics section students aware about Introduction & concept of proteomics,	Average	1.60	1.80	1.60	1.60	1.60	2.20	1.60	1.60	1.60	1.80	1.60	1.60	2.00	1.40	1.60
CO3	Protein structure-function relationship,																
CO4	Students understand various Techniques in Proteomics like MS, Maldi-tof, protein separation techniques																
CO5	Student understand application of proteomics in biological systems																

Class	M.Sc. (Biotechnology) Part-II	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT-402		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Advanced Bio analytical Techniques	CO1	3	2	1	2	1	1	2	1	2	1	3	2	2	2	2
Semester No	IV	CO2	2	1	1	1	2	2	1	2	2	2	1	2	1	2	3
Teacher Name	Sonawane K.B.	CO3	1	3	1	2	1	2	2	1	2	1	2	1	2	1	2
Course Outcomes		CO4	2	1	2	1	2	3	1	2	1	2	1	2	3	2	1
CO1	Students will know the principle and application of various instruments.	CO5	2	2	2	3	2	2	1	1	2	2	2	2	1	1	2
CO2	Students will be able to make a strategy on molecular techniques for the improvement in any trait or its well being based on the techniques learned during this course.	Average	2.00	1.80	1.40	1.80	1.60	2.00	1.40	1.40	1.80	1.60	1.80	1.80	1.80	1.60	2.00
CO3	This course can use the knowledge for designing a project for research and execute it.																

CO4	Students will be able develop competence in handling various chromatographic techniques and apply them in isolating and characterizing different biological molecules.
CO5	:Understanding the applications of centrifugation and chromatography in biological investigations

Class	M.Sc. (Biotechnology) Part-II	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT-403		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Research Project	CO1	1	1	1	2	2	1	3	2	2	1	2	2	1	1	2
Semester No	IV	CO2	2	1	2	2	2	2	1	2	1	2	1	2	1	2	2
Teacher Name	-	CO3	1	3	1	2	1	2	2	1	2	1	2	1	2	1	2
Course Outcomes		CO4	2	1	2	1	2	3	1	2	1	2	3	2	3	2	1
CO1	Students will be able to think from the research point of view	CO5	1	1	2	2	1	2	1	2	1	1	2	1	2	1	2
CO2	Students will be able to search research paper on web	Average	1.40	1.40	1.60	1.80	1.60	2.00	1.60	1.80	1.40	1.40	2.00	1.60	1.80	1.40	1.80
CO3	Students analytical view develops																
CO4	try to develop research aptitude																
CO5	Able to learn new techniques																

Class	M.Sc. (Biotechnology) Part-II	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT-406		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Research Methodology & Scientific Communication	CO1	2	2	1	2	2	1	3	1	2	2	2	2	2	3	1
Semester No	IV	CO2	2	1	2	1	2	3	1	2	2	2	1	2	1	2	2
Teacher Name	Katke P. M.	CO3	1	3	1	2	1	2	2	1	2	1	2	1	2	1	2
Course Outcomes		CO4	2	1	2	1	2	3	1	2	1	2	1	2	3	2	2
CO1	Demonstrate knowledge of research processes (reading, evaluating, and developing	CO5	2	2	2	2	1	2	1	3	2	1	2	1	2	2	2

CO2	Ability to understand some basic concepts of research and its methodologies	Average	1.80	1.80	1.60	1.60	1.60	2.20	1.60	1.80	1.80	1.60	1.60	1.60	2.00	2.00	1.80
CO3	Ability to define and apply appropriate parameters and research problems																
CO4	Ability to develop skills to draft a research paper																
CO5	Ability to analyse and comprehend the ethical practices in conducting research and dissemination of results in different forms																

Class	M.Sc. (Biotechnology) Part-II	Course	Program Outcomes												PSOs		
Subject Code	MBT-407	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Quality Control, Bio safety & Bioethics	CO1	1	2	2	2	2	1	2	1	2	2	2	2	1	3	1
Semester No	IV	CO2	2	1	2	1	2	3	1	2	2	1	1	2	1	2	2
Teacher Name	Gavhane A. J.	CO3	1	3	1	2	1	1	2	1	2	1	2	1	2	1	2
Course Outcomes		CO4	1	1	1	1	2	2	1	2	1	2	2	2	3	2	1
		CO5	2	2	2	2	1	2	1	3	2	1	2	1	2	2	2
	To gain knowledge of biosafety and risk assessment of products derived from recombinant DNA research environment release of genetically modified organisms, national and international regulations.																

CO2	<p>he students understand why India has adopted National IPR Policy and be familiar with broad outline of patent regulations;To understand different types of intellectual property rights in general and protection of products derived from biotechnology research and issues related to application and obtaining patents.To understand ethical aspects related to biological, biomedical, health care and biotechnology research.</p>	Average	1.40 1.80 1.60 1.60	1.60	1.80	1.40	1.80	1.80	1.40	1.80	1.60	1.80	2.00	1.60
CO3	<p>To gain knowledge of biosafety and risk assessment of products derived from recombinant DNA research environment release of genetically modified organisms, national and international regulations.</p>													
CO4	<p>To understand ethical aspects related to biological, biomedical, health care and biotechnology research.</p>													
CO5	<p>Recognize the importance of protection of new knowledge and innovations and its role in business</p>													

CO-PO Mapping

CO-PO ATTAIN

		Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
FY	FY	1 MBT- 101	1.60	1.60	1.40	1.40	1.40	1.60	1.60	1.40	1.40	1.40	1.40	1.60	1.40
		2 MBT- 102	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.60	1.40	1.60	1.60	1.40
		3 MBT- 103	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.60	1.40	1.60	1.60	1.40
		4 MBT- 104	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.60	1.40	1.60	1.60	1.40
		5 MBT- 105 T	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.60	1.40	1.60	1.60	1.40
		6 MBT- 105 P	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.60	1.40	1.60	1.60	1.40
		7 MBT-201	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.60	1.40	1.60	1.60	1.40
		8 MBT-202	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.60	1.40	1.60	1.60	1.40
		9 MBT-203	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.60	1.40	1.60	1.60	1.40
		10 MBT-204	1.80	1.60	1.60	1.40	1.80	1.60	1.60	1.60	1.60	1.40	1.60	1.60	1.40
		11 MBT-206	1.60	1.80	1.80	1.80	1.80	1.40	1.60	1.80	1.80	1.40	1.60	1.60	1.60
SY	SY	1 MBT-301	2.00	1.80	1.80	1.60	1.40	2.00	1.60	1.80	1.60	1.40	1.60	1.60	1.60
		2 MBT-302	1.80	1.80	1.60	1.80	1.80	2.00	1.60	1.60	1.60	1.40	1.80	1.80	1.80
		3 MBT-303	1.80	2.00	1.60	1.60	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.60	1.80
		4 MBT-304	1.80	1.80	1.60	1.60	1.60	2.00	1.60	1.60	1.40	1.60	1.60	1.40	1.40
		5 MBT-306 T	2.00	1.40	2.00	2.00	1.40	2.00	1.60	1.60	1.60	1.80	1.80	1.80	1.80
		6 MBT-306 P	1.80	1.60	1.80	1.40	1.40	2.00	1.80	1.80	1.60	1.40	1.60	1.40	1.40
		7 MBT-401	1.60	1.80	1.60	1.60	1.60	2.20	1.60	1.60	1.60	1.60	1.80	1.60	1.60
		8 MBT-402	2.00	1.80	1.40	1.80	1.60	2.00	1.40	1.40	1.80	1.60	1.80	1.80	1.80
		9 MBT-403	1.40	1.40	1.60	1.80	1.60	2.00	1.60	1.80	1.40	1.40	2.00	1.60	1.60
		10 MBT-406	1.80	1.80	1.60	1.60	1.60	2.20	1.60	1.80	1.80	1.60	1.60	1.60	1.60
		11 MBT-407	1.40	1.80	1.60	1.60	1.60	1.80	1.40	1.80	1.80	1.40	1.40	1.80	1.60

PO1	PO2	PO3	PO4	PO5	PO6
1.088	1.088	0.952	0.952	0.952	1.088
1.8	1.6	1.6	1.4	1.8	1.6
1.224	1.088	1.088	0.952	1.224	1.088
1.8	1.6	1.6	1.4	1.8	1.6
1.8	1.6	1.6	1.4	1.8	1.6
1.8	1.6	1.6	1.4	1.8	1.6
1.8	1.6	1.6	1.4	1.8	1.6
1.8	1.6	1.6	1.4	1.8	1.6
1.8	1.6	1.6	1.4	1.8	1.6
1.6	1.8	1.8	1.8	1.8	1.4
2	1.8	1.8	1.6	1.4	2
1.8	1.8	1.6	1.8	1.8	2
0.936	1.04	0.832	0.832	0.936	1.04
1.8	1.8	1.6	1.6	1.6	2
2	1.4	2	2	1.4	2
1.8	1.6	1.8	1.4	1.4	2
1.6	1.8	1.6	1.6	1.6	2.2
2	1.8	1.4	1.8	1.6	2
1.4	1.4	1.6	1.8	1.6	2
1.8	1.8	1.6	1.6	1.6	2.2
1.4	1.8	1.6	1.6	1.6	1.8

MENT

PO7	PO8	PO9	PO10	PO11	PO12
1.088	0.952	0.952	0.952	1.088	0.952
1.6	1.6	1.4	1.6	1.6	1.4
1.088	1.088	0.952	1.088	1.088	0.952
1.6	1.6	1.4	1.6	1.6	1.4
1.6	1.6	1.4	1.6	1.6	1.4
1.6	1.6	1.4	1.6	1.6	1.4
1.6	1.6	1.4	1.6	1.6	1.4
1.6	1.6	1.4	1.6	1.6	1.4
1.6	1.6	1.4	1.6	1.6	1.4
1.6	1.6	1.4	1.6	1.6	1.4
1.6	1.8	1.4	1.6	1.6	1.6
1.6	1.8	1.6	1.4	1.6	1.6
1.6	1.6	1.6	1.4	1.8	1.8
0.832	0.936	0.832	0.936	0.832	0.936
1.6	1.6	1.4	1.6	1.6	1.4
1.6	1.6	1.6	1.8	1.8	1.8
1.8	1.8	1.6	1.4	1.6	1.4
1.6	1.6	1.6	1.8	1.6	1.6
1.4	1.4	1.8	1.6	1.8	1.8
1.6	1.8	1.4	1.4	2	1.6
1.6	1.8	1.8	1.6	1.6	1.6
1.4	1.8	1.8	1.4	1.8	1.6

		CO-PSO MAPPING			
	Course	PSO1	PSO2	PSO3	
FY	1	MBT- 101	1.40	1.40	1.60
	2	MBT- 102	1.80	1.60	1.20
	3	MBT- 103	1.80	1.60	1.20
	4	MBT- 104	1.80	1.60	1.20
	5	MBT- 105	1.80	1.60	1.20
	6	MBT- 105	1.80	1.60	1.20
	7	MBT-201	1.80	1.60	1.20
	8	MBT-202	1.80	1.60	1.20
	9	MBT-203	1.80	1.60	1.20
	10	MBT-204	1.80	1.60	1.20
	11	MBT-206	1.60	1.60	1.40
SY	1	MBT-301	1.80	2.00	1.60
	2	MBT-302	2.00	1.60	2.00
	3	MBT-303	2.00	1.60	1.80
	4	MBT-304	2.00	1.40	2.00
	5	MBT-306 T	2.00	2.00	1.80
	6	MBT-306 P	1.80	1.60	1.80
	7	MBT-401	2.00	1.40	1.60
	8	MBT-402	1.80	1.60	2.00
	9	MBT-403	1.80	1.40	1.80
	10	MBT-406	2.00	2.00	1.80
	11	MBT-407	1.80	2.00	1.60

CO-PSO ATTAINMENT				
Course	PSO1	PSO2	PSO3	
MBT- 101	0.952	0.952	1.088	
MBT- 102	1.8	1.6	1.2	
MBT- 103	1.224	1.088	0.816	
MBT- 104	1.8	1.6	1.2	
MBT- 105 T	1.8	1.6	1.2	
MBT- 105 P	1.8	1.6	1.2	
MBT-201	1.8	1.6	1.2	
MBT-202	1.8	1.6	1.2	
MBT-203	1.8	1.6	1.2	
MBT-204	1.8	1.6	1.2	
MBT-206	1.6	1.6	1.4	
MBT-301	1.8	2	1.6	
MBT-302	2	1.6	2	
MBT-303	1.04	0.832	0.936	
MBT-304	2	1.4	2	
MBT-306 T	2	2	1.8	
MBT-306 P	1.8	1.6	1.8	
MBT-401	2	1.4	1.6	
MBT-402	1.8	1.6	2	
MBT-403	1.8	1.4	1.8	
MBT-406	2	2	1.8	
MBT-407	1.8	2	1.6	

CO-PSO ATTAINMENT				
Course	PSO1	PSO2	PSO3	
MBT- 101	68	68	68	
MBT- 102	100	100	100	
MBT- 103	68	68	68	
MBT- 104	100	100	100	
MBT- 105	100	100	100	
MBT- 105	100	100	100	
MBT-201	100	100	100	
MBT-202	100	100	100	
MBT-203	100	100	100	
MBT-204	100	100	100	
MBT-206	100	100	100	
MBT-301	100	100	100	
MBT-302	100	100	100	
MBT-303	52	52	52	
MBT-304	100	100	100	
MBT-306 T	100	100	100	
MBT-306 P	100	100	100	
MBT-401	100	100	100	
MBT-402	100	100	100	
MBT-403	100	100	100	
MBT-406	100	100	100	
MBT-407	100	100	100	