Academic Year	2021-22

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

Department Name	Department of Biotechnology

Program Name	M.Sc. Biotechnology

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 thinking related to Biotechnology Industry, Pharma industry, Medical or hospital related organizations, Regulatory Agencies, & Academia

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 :	**2021-22**

Class	M.Sc. Biotech 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	3	3	3	2	2	3	2	1	2	2	2	3	1	3	3
Semester No	1	CO2	2	3	2	3	3	2	3	2	2	2	2	3	2	2	2
Teacher Name	Komal Sonawane	CO3	3	3	3	3	3	2	3	2	2	1	3	3	2	2	2
Course Outcomes		CO4	2	3	3	3	3	2	2	2	3	2	2	3	1	2	3
CO1	A strong understanding of fundamentals of biochemical process at an advanced level.	CO5	2	3	3	3	3	2	2	2	2	2	2	3	2	2	2
CO2	Better understanding of major thrust areas of the discipline	Average	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00	1.60	2.20	2.40
CO3	Knowhow on current developments in the biochemical research																
CO4	Capacity to identify, analyze and design safe experimental process to provide efficient solutions by fair interpretation of data																
CO5	Perfect gain insight into biochemical research ethics for production of quality research and publication.																

Class	M.Sc. Biotech 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	2	2	2	3	3	3	3	2	2	3	3	1	3
Semester No	1	CO2	3	2	2	2	2	3	2	3	2	3	3	2	2	2	2
Teacher Name	Rajashri Bhope	CO3	3	2	2	1	3	3	3	3	3	3	3	2	2	2	2
Course Outcomes		CO4	2	2	3	2	2	3	2	3	3	3	3	2	3	1	2
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	2	2	2	2	3	2	3	3	3	3	2	2	2	2
CO2	To gain an understanding of chemical and molecular processes that occurs in and between cells	Average	2.40	1.80	2.20	1.80	2.20	3.00	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.60	2.20
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.																

		Course Outcomes	Program Outcomes												PSOs		
Class	M.Sc. Biotech Part-I		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Code	MBT- 103	CO1	2	2	2	3	3	2	1	2	3	3	2	3	3	1	3
Subject Name	Genetics & Immunology	CO2	3	2	2	2	2	3	2	2	3	3	3	2	2	2	2
Semester No	1	CO3	3	2	3	3	3	3	2	1	3	3	3	2	2	2	2
Teacher Name	Katke P M & Gavhane A J	CO4	2	3	2	2	3	3	2	2	3	3	3	2	2	2	2
Course Outcomes		CO5	2	2	2	2	3	3	2	2	3	3	3	2	3	1	2
CO1	Knowledge regarding mutation: Causes, agents that are responsible and role in cancer and cell death.	Average	2.40	2.20	2.20	2.40	2.80	2.80	1.80	1.80	3.00	3.00	2.80	2.20	2.40	1.60	2.20
CO2	Thorough knowledge of immunity and the factors responcible for developing immunity and preventing infection																
CO3	Development of diseases and its prevention																
CO4	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. Biotech 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	3	3	3	2	2	3	2	1	2	2	2	3	1	3	3
Semester No	1	CO2	2	3	2	3	3	2	3	2	2	2	2	3	2	2	2
Teacher Name	Sonawane, Katke, Gavhane, Galande	CO3	3	3	3	3	3	2	3	2	2	1	3	3	2	2	2
Course Outcomes		CO4	2	3	3	3	3	2	2	2	3	2	2	3	1	2	3
CO1	Study and analyze various aspects of Biotechnology with respect to environment	CO5	2	3	3	3	3	2	2	2	2	2	2	3	2	2	2
CO2	Understanding and assimilating the specific concepts and terminology of environmental biotechnology.	Average	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00	1.60	2.20	2.40
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. Biotech 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	CO1	2	1	2	2	2	3	3	3	3	2	2	3	3	1	3
Semester No	1	CO2	3	2	2	2	2	3	2	3	2	3	3	2	2	2	2
Teacher Name	Jyotsna Galande	CO3	3	2	2	1	3	3	3	3	3	3	3	2	2	2	2
Course Outcomes		CO4	2	2	3	2	2	3	2	3	3	3	3	2	3	1	2
CO1	Study and analyze various aspects of Biotechnology with respect to environment	CO5	2	2	2	2	2	3	2	3	3	3	3	2	2	2	2

	CO2	Understanding and assimilating the specific concepts and terminology of environmental biotechnology.	Average	2.40	1.80	2.20	1.80	2.20	3.00	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.60	2.20
	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. Biotech 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	CO1	2	2	2	3	3	2	1	2	3	3	2	3	3	1	3
Semester No	1	CO2	3	2	2	2	2	3	2	2	3	3	3	2	2	2	2
Teacher Name	-	CO3	3	2	3	3	3	3	2	1	3	3	3	2	2	2	2
Course Outcomes		CO4	2	3	2	2	3	3	2	2	3	3	3	2	2	2	2
	CO1	Study and analyze various aspects of Biotechnology with respect to environment	CO5	2	2	2	2	3	3	2	2	3	3	3	2	3	1	2
	CO2	Understanding and assimilating the specific concepts and terminology of environmental biotechnology.	Average	2.40	2.20	2.20	2.40	2.80	2.80	1.80	1.80	3.00	3.00	2.80	2.20	2.40	1.60	2.20
	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. Biotech 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	3	3	3	2	2	3	2	1	2	2	2	3	1	3	3
Semester No	2	CO2	2	3	2	3	3	2	3	2	2	2	2	3	2	2	2
Teacher Name	Bhope R V	CO3	3	3	3	3	3	2	3	2	2	1	3	3	2	2	2
Course Outcomes		CO4	2	3	3	3	3	2	2	2	3	2	2	3	1	2	3

	CO1	The students will have knowledge of tools and strategies used in genetic engineering.	CO5	2	3	3	3	3	2	2	2	2	2	2	3	2	2	2
	CO2	Understanding of applications of recombinant DNA technology and genetic engineering. from academic and industrial perspective	Average	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00	1.60	2.20	2.40
	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. Biotech 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	2	2	2	3	3	3	3	2	2	3	3	1	3
Semester No	2	CO2	3	2	2	2	2	3	2	3	2	3	3	2	2	2	2
Teacher Name	Gavhane A J	CO3	3	2	2	1	3	3	3	3	3	3	3	2	2	2	2
Course Outcomes		CO4	2	2	3	2	2	3	2	3	3	3	3	2	3	1	2
CO1	To understand Taxonomy and Diversity of Bacteria	CO5	2	2	2	2	2	3	2	3	3	3	3	2	2	2	2
CO2	To have Ultrastructure of Bacteria and Archea	Average	2.40	1.80	2.20	1.80	2.20	3.00	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.60	2.20
CO3	The students will learn about extrmophiles,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. Biotech Part-I	Course Outcomes	Program Outcomes												PSOs		
Subject Code		MBT-203		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name		Plant Biotechnology	CO1	2	1	2	2	2	3	3	3	3	2	2	3	3	1	3
Semester No		2	CO2	3	2	2	2	2	3	2	3	2	3	3	2	2	2	2
Teacher Name		Galande J S	CO3	3	2	2	1	3	3	3	3	3	3	3	2	2	2	2
Course Outcomes			CO4	2	2	3	2	2	3	2	3	3	3	3	2	3	1	2
	CO1	Knowledge of developing PTC laboratory	CO5	2	2	2	2	2	3	2	3	3	3	3	2	2	2	2
	CO2	Roles of hormones in plant growth and regulation	Average	2.40	1.80	2.20	1.80	2.20	3.00	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.60	2.20
	CO3	Micropropagation of ornamental plants																
	CO4	Learn applications of transgenic plants																
	CO5	Establish different types of plant cultures.																

Class		M.Sc. Biotech Part-I	Course Outcomes	Program Outcomes												PSOs		
Subject Code		MBT-204		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	3	3	3	2	2	3	2	1	2	2	2	3	1	3	3
Semester No		2	CO2	2	3	2	3	3	2	3	2	2	2	2	3	2	2	2
Teacher Name		Bhope, Galande, Gavhane, Katke	CO3	3	3	3	3	3	2	3	2	2	1	3	3	2	2	2
Course Outcomes			CO4	2	3	3	3	3	2	2	2	3	2	2	3	1	2	3
	CO1	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.	CO5	2	3	3	3	3	2	2	2	2	2	2	3	2	2	2
	CO2	Understanding of tools and techniques involved in molecular cloning	Average	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00	1.60	2.20	2.40
	CO3	The morphology, cultural, biochemical and other biological properties and characteristics of medically important bacteria.																
	CO4	The mechanism of virulence and pathogenesis and pathology.																

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

			Course Outcomes	Program Outcomes												PSOs		
Class		M.Sc. Biotech Part-I		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Code		MBT-206	CO1	2	2	2	3	3	2	1	2	3	3	2	3	3	1	3
Subject Name		Medical Biotechnology	CO2	3	2	2	2	2	3	2	2	3	3	3	2	2	2	2
Semester No		2	CO3	3	2	3	3	3	3	2	1	3	3	3	2	2	2	2
Teacher Name		Bhope Rajashri	CO4	2	3	2	2	3	3	2	2	3	3	3	2	2	2	2
Course Outcomes			CO5	2	2	2	2	3	3	2	2	3	3	3	2	3	1	2
	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.	Average	2.40	2.20	2.20	2.40	2.80	2.80	1.80	1.80	3.00	3.00	2.80	2.20	2.40	1.60	2.20
	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																
	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																

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Class	M.Sc.Biotech 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	3	3	3	2	2	3	2	1	2	2	2	3	1	3	3
Semester No	3	CO2	3	3	3	3	3	2	3	2	2	1	3	3	2	2	2
Teacher Name	Katke PM	CO3	2	3	3	3	3	2	2	2	2	2	2	3	2	2	2
Course Outcomes		CO4	2	3	2	3	3	2	3	2	2	2	2	3	2	2	2
	CO1	Course contains introduction of Tissue/Cell Culture and techniques which includes various systems of tissue cultures.	CO5	2	3	3	3	3	2	2	2	3	2	2	3	1	2	3
	CO2	it also include Establishing primary cell culture, Organ culture and cell lines with their Methodology.	Average	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00	1.60	2.20	2.40
	CO3	program contains Stem cells technology and its applications															
	CO4	Transgenic animal and their strategies gives broad ideas to students for experimental studies.															
	CO5	program also includes Study of animal husbandry and their application															

Class	M.Sc.Biotech 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	3	3	3	2	2	3	2	1	2	2	2	3	3	1	3
Semester No	3	CO2	2	3	2	3	3	2	3	2	2	2	2	3	2	2	2
Teacher Name	Gavhane A J	CO3	3	3	3	3	3	2	3	2	2	1	3	3	2	2	2

Course Outcomes																	
			CO4	2	3	3	3	3	2	2	2	3	2	2	3	2	2	2
	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	3	3	3	3	2	2	2	2	2	2	3	3	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	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00	2.40	1.60	2.20
	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 downstram processing. the students also learn about QC and QA aspect and product recovery,purification and testing with various examples.																

Class	M.Sc.Biotech 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	3	3	2	2	2	2	3	2	3	1	2	3	3	1	3
Semester No	3	CO2	2	2	3	3	2	2	3	3	2	2	2	3	2	2	2
Teacher Name	Katke P M	CO3	3	3	3	3	2	3	3	3	2	2	1	3	3	1	2
Course Outcomes		CO4	2	3	3	2	3	2	3	3	2	2	2	3	2	2	2
	CO1	Course objective is to learn Major Bioinformatics Resources and Biological databases and Basic Concepts in Biological sequence Analysis	CO5	2	3	3	2	2	2	3	3	2	2	2	3	2	2	2
	CO2	Student also learn Structural Bioinformatics, Pharmacophore modelling and Chemoinformatics and Molecular Modeling.	Average	2.40	2.80	2.80	2.40	2.20	2.20	3.00	2.80	2.20	1.80	1.80	3.00	2.40	1.60	2.20
	CO3	Student also learn Biostatistic in this course which includes Sampling, distribution and presentation, Hypothesis Testing (with biological examples) and Design, correlation and regression analysis.																
	CO4	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																
	CO5	Students get aquatinted to the computational aspect of Biotechnology																

Class	M.Sc.Biotech 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	3	3	2	2	3	2	1	2	2	2	3	1	3	3

Semester No	3	CO2	3	3	3	3	3	2	3	2	2	1	3	3	2	2	2
Teacher Name	Katke, Gavhane, Galande	CO3	2	3	3	3	3	2	2	2	2	2	2	3	2	2	2
Course Outcomes		CO4	2	3	2	3	3	2	3	2	2	2	2	3	2	2	2
CO1	The students will able to carry out screening and preservation of industrailly important microrganisms.	CO5	2	3	3	3	3	2	2	2	3	2	2	3	1	2	3
CO2	The student will carry out fermentation at laboraatory scale and product assay	Average	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00	1.60	2.20	2.40
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.Biotech Part-II	Course Outcomes	Program Outcomes												PSOs		
Subject Code	MBT-305T		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Agricultural Biotechnology (2T)	CO1	3	3	3	2	2	3	2	1	2	2	2	3	3	1	3
Semester No	3	CO2	2	3	2	3	3	2	3	2	2	2	2	3	2	2	2
Teacher Name	Galande JS	CO3	3	3	3	3	3	2	3	2	2	1	3	3	2	2	2
Course Outcomes		CO4	2	3	3	3	3	2	2	2	3	2	2	3	2	2	2
CO1	The students will learn about applications of biotecnology in agriculture	CO5	2	3	3	3	3	2	2	2	2	2	2	3	3	1	2
CO2	The student will learn abot plant bioreactor and use	Average	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00	2.40	1.60	2.20
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.Biotech Part-II	Course Outcomes	Program Outcomes										PSOs		
Subject Code	MBT-305P		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Agricultural Biotechnology (2P)	CO1	3	3	2	2	2	2	3	2	3	1	2	3	3	1	3
Semester No	3	CO2	2	2	3	3	2	2	3	3	2	2	2	3	2	2	2
Teacher Name	Galande JS	CO3	3	3	3	3	2	3	3	3	2	2	1	3	3	1	2
Course Outcomes		CO4	2	3	3	2	3	2	3	3	2	2	2	3	2	2	2
CO1	The students will learn about applications of biotecnology in agriculture	CO5	2	3	3	2	2	2	3	3	2	2	2	3	2	2	2
CO2	The student will learn abot plant bioreactor and use	Average	2.40	2.80	2.80	2.40	2.20	2.20	3.00	2.80	2.20	1.80	1.80	3.00	2.40	1.60	2.20
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.Biotech 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	3	3	3	2	2	3	2	1	2	2	2	3	1	3	3
Semester No	4	CO2	3	3	3	3	3	2	3	2	2	1	3	3	2	2	2
Teacher Name	Bhope & Katke	CO3	2	3	3	3	3	2	2	2	2	2	2	3	2	2	2
Course Outcomes		CO4	2	3	2	3	3	2	3	2	2	2	2	3	2	2	2

	CO1	Students learns about Genomics, Transcriptomics, Microarray and application of genomics	CO5	2	3	3	3	3	2	2	2	3	2	2	3	1	2	3
	CO2	In proteomics section students aware about Introduction & concept of proteomics,	Average	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00	1.60	2.20	2.40
	CO3	Protein structure-function relationship,																
	CO4	Students understand variousTechniques in Proteomics like MS, Maldi-tof, protein separation techniques																
	CO5	Student understand application of proteomics in biological systems																

Class	M.Sc.Biotech 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	3	3	2	2	3	2	1	2	2	2	3	3	1	3
Semester No	4	CO2	2	3	2	3	3	2	3	2	2	2	2	3	2	2	2
Teacher Name	Sonawane KB	CO3	3	3	3	3	3	2	3	2	2	1	3	3	2	2	2
Course Outcomes		CO4	2	3	3	3	3	2	2	2	3	2	2	3	2	2	2
	CO1	Students will know the principle and application of various instruments.	CO5	2	3	3	3	3	2	2	2	2	2	2	3	3	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	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00	2.40	1.60	2.20
	CO3	This course can use the knowledge for designing a project for research and execute it.																
	CO4	Students will be able develop competence in handing 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.Biotech 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	3	3	2	2	2	2	3	2	3	1	2	3	3	1	3
Semester No	4	CO2	2	2	3	3	2	2	3	3	2	2	2	3	2	2	2
Teacher Name	-	CO3	3	3	3	3	2	3	3	3	2	2	1	3	3	1	2
Course Outcomes		CO4	2	3	3	2	3	2	3	3	2	2	2	3	2	2	2
CO1	Students will be able to think from the research point of view	CO5	2	3	3	2	2	2	3	3	2	2	2	3	2	2	2
CO2	Students will be able to search research paper on web	Average	2.40	2.80	2.80	2.40	2.20	2.20	3.00	2.80	2.20	1.80	1.80	3.00	2.40	1.60	2.20
CO3	Students analytical view develops																
CO4	try to develop research aptitude																
CO5	Able to learn new techniques																

Class	M.Sc.Biotech 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	3	3	3	2	2	3	2	1	2	2	2	3	1	3	3
Semester No	4	CO2	3	3	3	3	3	2	3	2	2	1	3	3	2	2	2
Teacher Name	Katke P M	CO3	2	3	3	3	3	2	2	2	2	2	2	3	2	2	2
Course Outcomes		CO4	2	3	2	3	3	2	3	2	2	2	2	3	2	2	2
CO1	Demonstrate knowledge of research processes (reading, evaluating, and developing	CO5	2	3	3	3	3	2	2	2	3	2	2	3	1	2	3
CO2	Ability to understand some basic concepts of research and its methodologies	Average	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00	1.60	2.20	2.40
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.Biotech Part-II	Course Outcomes	Program Outcomes											PSOs		
Subject Code	MBT-407		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Quality Control, Bio safety & Bioethics	CO1	3	3	3	2	2	3	2	1	2	2	2	3	3	1	3
Semester No	4	CO2	2	3	2	3	3	2	3	2	2	2	2	3	2	2	2
Teacher Name	Gavhane A J	CO3	3	3	3	3	3	2	3	2	2	1	3	3	2	2	2
Course Outcomes		CO4	2	3	3	3	3	2	2	2	3	2	2	3	2	2	2
	CO1	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.	CO5	2	3	3	3	3	2	2	2	2	2	2	3	3	1	2
	CO2	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.	Average	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00	2.40	1.60	2.20
	CO3	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.																

	CO4	To understand ethical aspects related to biological, biomedical, health care and biotechnology research.
	CO5	Recognize the importance of protection of new knowledge and innovations and its role in business

CO-PO Mapping

			Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		1	MBT- 101	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00
		2	MBT- 102	2.40	1.80	2.20	1.80	2.20	3.00	2.40	3.00	2.80	2.80	2.80	2.20
		3	MBT- 103	2.40	2.20	2.20	2.40	2.80	2.80	1.80	1.80	3.00	3.00	2.80	2.20
		4	MBT- 104	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00
		5	MBT -105 T	2.40	1.80	2.20	1.80	2.20	3.00	2.40	3.00	2.80	2.80	2.80	2.20
		6	MBT -105 P	2.40	2.20	2.20	2.40	2.80	2.80	1.80	1.80	3.00	3.00	2.80	2.20
		7	MBT-201	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00
		8	MBT-202	2.40	1.80	2.20	1.80	2.20	3.00	2.40	3.00	2.80	2.80	2.80	2.20
		9	MBT-203	2.40	1.80	2.20	1.80	2.20	3.00	2.40	3.00	2.80	2.80	2.80	2.20
		10	MBT-204	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00
FY	FY	11	MBT-206	2.40	2.20	2.20	2.40	2.80	2.80	1.80	1.80	3.00	3.00	2.80	2.20
		1	MBT-301	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00
		2	MBT-302	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00
		3	MBT-303	2.40	2.80	2.80	2.40	2.20	2.20	3.00	2.80	2.20	1.80	1.80	3.00
		4	MBT-304	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00
		5	MBT-305T	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00
		6	MBT-305P	2.40	2.80	2.80	2.40	2.20	2.20	3.00	2.80	2.20	1.80	1.80	3.00
		7	MBT-401	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00
		8	MBT-402	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00
		9	MBT-403	2.40	2.80	2.80	2.40	2.20	2.20	3.00	2.80	2.20	1.80	1.80	3.00
		10	MBT-406	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00
SY	SY	11	MBT-407	2.40	3.00	2.80	2.80	2.80	2.20	2.40	1.80	2.20	1.80	2.20	3.00

CO-PO ATTAINMENT

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
2.4	3	2.8	2.8	2.8	2.2	2.4	1.8	2.2	1.8	2.2	3
1.888	1.416	1.730667	1.416	1.730667	2.36	1.888	2.36	2.202667	2.202667	2.202667	1.730667
2.144	1.965333	1.965333	2.144	2.501333	2.501333	1.608	1.608	2.68	2.68	2.501333	1.965333
1.888	2.36	2.202667	2.202666667	2.202667	1.730667	1.888	1.416	1.730667	1.416	1.730667	2.36
2.4	1.8	2.2	1.8	2.2	3	2.4	3	2.8	2.8	2.8	2.2
2.4	2.2	2.2	2.4	2.8	2.8	1.8	1.8	3	3	2.8	2.2
1.248	1.56	1.456	1.456	1.456	1.144	1.248	0.936	1.144	0.936	1.144	1.56
1.248	0.936	1.144	0.936	1.144	1.56	1.248	1.56	1.456	1.456	1.456	1.144
1.248	0.936	1.144	0.936	1.144	1.56	1.248	1.56	1.456	1.456	1.456	1.144
1.248	1.56	1.456	1.456	1.456	1.144	1.248	0.936	1.144	0.936	1.144	1.56
1.632	1.496	1.496	1.632	1.904	1.904	1.224	1.224	2.04	2.04	1.904	1.496
2.4	3	2.8	2.8	2.8	2.2	2.4	1.8	2.2	1.8	2.2	3
2.144	2.68	2.501333	2.501333333	2.501333	1.965333	2.144	1.608	1.965333	1.608	1.965333	2.68
2.4	2.8	2.8	2.4	2.2	2.2	3	2.8	2.2	1.8	1.8	3
2.4	3	2.8	2.8	2.8	2.2	2.4	1.8	2.2	1.8	2.2	3
2.4	3	2.8	2.8	2.8	2.2	2.4	1.8	2.2	1.8	2.2	3
2.4	2.8	2.8	2.4	2.2	2.2	3	2.8	2.2	1.8	1.8	3
1.248	1.56	1.456	1.456	1.456	1.144	1.248	0.936	1.144	0.936	1.144	1.56
1.248	1.56	1.456	1.456	1.456	1.144	1.248	0.936	1.144	0.936	1.144	1.56
1.248	1.56	1.456	1.456	1.456	1.144	1.248	0.936	1.144	0.936	1.144	1.56
2.4	2.8	2.8	2.4	2.2	2.2	3	2.8	2.2	1.8	1.8	3
1.632	2.04	1.904	1.904	1.904	1.496	1.632	1.224	1.496	1.224	1.496	2.04
1.248	1.56	1.456	1.456	1.456	1.144	1.248	0.936	1.144	0.936	1.144	1.56

Percentage CO-PO ATTAINMENT

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
100	100	100	100	100	100	100	100	100	100	100	100
78.66667	78.66667	78.66667	78.66666667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667
89.33333	89.33333	89.33333	89.33333333	89.33333	89.33333	89.33333	89.33333	89.33333	89.33333	89.33333	89.33333
78.66667	78.66667	78.66667	78.66666667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667
100	100	100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100	100	100
52	52	52	52	52	52	52	52	52	52	52	52
52	52	52	52	52	52	52	52	52	52	52	52
52	52	52	52	52	52	52	52	52	52	52	52
52	52	52	52	52	52	52	52	52	52	52	52
68	68	68	68	68	68	68	68	68	68	68	68
100	100	100	100	100	100	100	100	100	100	100	100
89.33333	89.33333	89.33333	89.33333333	89.33333	89.33333	89.33333	89.33333	89.33333	89.33333	89.33333	89.33333
100	100	100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100	100	100
52	52	52	52	52	52	52	52	52	52	52	52
100	100	100	100	100	100	100	100	100	100	100	100
52	52	52	52	52	52	52	52	52	52	52	52
52	52	52	52	52	52	52	52	52	52	52	52
100	100	100	100	100	100	100	100	100	100	100	100
68	68	68	68	68	68	68	68	68	68	68	68
52	52	52	52	52	52	52	52	52	52	52	52

FY

SY

CO-PSO MAPPING

	Course	PSO1	PSO2	PSO3
1	MBT- 101	1.60	2.20	2.40
2	MBT- 102	2.40	1.60	2.20
3	MBT- 103	2.40	1.60	2.20
4	MBT- 104	1.60	2.20	2.40
5	MBT -105 T	2.40	1.60	2.20
6	MBT -105 P	2.40	1.60	2.20
7	MBT-201	1.60	2.20	2.40
8	MBT-202	2.40	1.60	2.20
9	MBT-203	2.40	1.60	2.20
10	MBT-204	1.60	2.20	2.40
11	MBT-206	2.40	1.60	2.20
1	MBT-301	1.60	2.20	2.40
2	MBT-302	2.40	1.60	2.20
3	MBT-303	2.40	1.60	2.20
4	MBT-304	1.60	2.20	2.40
5	MBT-305T	2.40	1.60	2.20
6	MBT-305P	2.40	1.60	2.20
7	MBT-401	1.60	2.20	2.40
8	MBT-402	2.40	1.60	2.20
9	MBT-403	2.40	1.60	2.20
10	MBT-406	1.60	2.20	2.40
11	MBT-407	2.40	1.60	2.20

CO-PSO ATTAINMENT

Course	PSO1	PSO2	PSO3
MBT- 101	1.6	2.2	2.4
MBT- 102	1.888	1.258667	1.730667
MBT- 103	2.144	1.429333	1.965333
MBT- 104	1.258667	1.730667	1.888
MBT -105 T	2.4	1.6	2.2
MBT -105 P	2.4	1.6	2.2
MBT-201	0.832	1.144	1.248
MBT-202	1.248	0.832	1.144
MBT-203	1.248	0.832	1.144
MBT-204	0.832	1.144	1.248
MBT-206	1.632	1.088	1.496
MBT-301	1.6	2.2	2.4
MBT-302	2.144	1.429333	1.965333
MBT-303	2.4	1.6	2.2
MBT-304	1.6	2.2	2.4
MBT-305T	2.4	1.6	2.2
MBT-305P	2.4	1.6	2.2
MBT-401	0.832	1.144	1.248
MBT-402	1.248	0.832	1.144
MBT-403	2.4	1.6	2.2
MBT-406	1.088	1.496	1.632
MBT-407	1.248	0.832	1.144

Percentage CO-PSO ATTAINMENT

Course	PSO1	PSO2	PSO3
MBT- 101	100	100	100
MBT- 102	78.66667	78.66667	78.66667
MBT- 103	89.33333	89.33333	89.33333
MBT- 104	78.66667	78.66667	78.66667
MBT -105 T	100	100	100
MBT -105 P	100	100	100
MBT-201	52	52	52
MBT-202	52	52	52
MBT-203	52	52	52
MBT-204	52	52	52
MBT-206	68	68	68
MBT-301	100	100	100
MBT-302	89.33333	89.33333	89.33333
MBT-303	100	100	100
MBT-304	100	100	100
MBT-305T	100	100	100
MBT-305P	100	100	100
MBT-401	52	52	52
MBT-402	52	52	52
MBT-403	100	100	100
MBT-406	68	68	68
MBT-407	52	52	52