

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	B.Sc.
---------------------	--------------

Program Outcomes(PO)

PO1	To introduce the concepts in various allied subjects.
PO2	To enrich students' knowledge..
PO3	To help the students to build interdisciplinary approach.
PO4	To inculcate sense of scientific responsibilities and social and environment awareness.
PO5	To help students build-up a progressive and successful career.
PO6	To train the students to work independently and also to adapt themselves to work efficiently in intra, inter and
PO7	To develop skills, attitude and values required for self-directed, lifelong commitment to learning and professional
PO8	To adopt code of ethics in professional and social context. It also help to demonstrate exemplary professional,
PO9	To comprehend the complex interconnections between the biotechnology, medicine, economy and legal aspects
PO10	To analyze, design and conduct experiments to solve problems in various courses of biotechnology by the use of
PO11	To execute their professional roles as biotechnology professionals, employers and employees in various
PO12	To find employment opportunities in pharma industries, healthcare, food industry, dairies, academia and research

Program Specific Outcome(PSO)

PSO1	The interdisciplinary nature of biotechnology helps student to understand living systems including animal, plant,
PSO2	Application of these studies on living organisms and their bioprocesses are learnt by students.
PSO3	Biotechnologists are always in demand as an efficient work force in fundamental research and industries.

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

Class		F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 101			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Fundamentals of Chemistry-I		CO1	1	2	1	2	1	1	2	1	2	1	1	2	1	2	2
Semester No	I		CO2	2	1	3	2	2	1	1	1	1	1	2	2	1	1	1
Teacher Name	Komal Sonawane		CO3	1	1	1	1	1	1	2	1	2	1	2	1	2	2	
Course Outcomes			CO4	2	2	2	1	2	2	1	2	3	3	1	2	2	1	1
	CO1	To understand rate laws, rate equations and the effect of temperature on reaction rates.	CO5	1	1	2	1	2	2	1	1	2	1	1	2	1	2	1
	CO2	To learn the basic concepts of Stereochemistry and their effect on reaction rates.	Average	1.40	1.40	1.80	1.40	1.60	1.40	1.40	1.20	2.00	1.40	1.40	1.80	1.20	1.60	1.40
	CO3	To understand about the formation and stability of reaction intermediates and their electrophilic and nucleophilic behavior.																
	CO4	To understand reaction kinetics, reaction thermodynamics and tautomerism of organic compounds.																
	CO5	To understand the basic concept of kinetic theory of gases and know how to solve numerical problems related to that topic																

Class		F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 102			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Fundamentals of Physics		CO1	1	1	1	1	1	1	1	2	1	1	2	1	2	2	
Semester No	I		CO2	1	1	2	1	2	1	1	1	1	2	2	1	1	1	
Teacher Name	Iram Shaikh		CO3	1	1	1	1	1	1	2	1	2	1	2	1	2	2	
Course Outcomes			CO4	2	2	2	1	2	2	1	2	1	2	1	2	2	1	1
	CO1	Students will use mathematics and computation to describe and manipulate fundamental physical constructs and to solve problems.	CO5															
	CO2	Demonstrate a growing conceptual understanding of the basic fields of physics.	Average	2	1	1	1	1	1	1	2	1	1	2	1	2	1	
	CO3	Use basic experimental apparatus common to the study of physical phenomena		1.40	1.20	1.40	1.00	1.40	1.20	1.20	1.20	1.60	1.20	1.40	1.80	1.20	1.60	1.40

CO4	To understand the basic laws and explore the fundamental concepts of physics
CO5	To carry out experiments to understand the laws and concepts of Physics.

Class		F. Y. B. Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 103			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Biochemistry I	CO1	1	2	1	2	1	1	2	1	2	1	1	2	1	2	2	
Semester No	I	CO2	2	1	2	2	2	2	1	1	1	1	2	2	1	1	1	
Teacher Name	Komal Sonawane	CO3	3	1	1	1	1	1	2	1	2	1	2	1	1	2	2	
Course Outcomes		CO4	2	2	2	1	2	2	1	2	2	2	1	2	2	1	1	
	CO1	Be able to frame a scientific question or problem.	CO5															
	CO2	Be able to undertake investigations and perform analyses that provide information about biochemical questions and help to solve biochemical problems.	Average	1.80	1.40	1.60	1.40	1.60	1.60	1.40	1.20	1.80	1.20	1.40	1.80	1.20	1.60	1.80
	CO3	Be able to demonstrate accurate quantitative analysis and computer literacy.																
	CO4	Be able to communicate effectively, through writing and oral communication, the results of scientific investigations.																
	CO5	Be able to understand and effectively apply scientific ethics.																

Class		F. Y. B. Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 104			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Biophysics	CO1	1	2	1	1	1	1	2	1	2	2	1	2	2	2	2	
Semester No	I	CO2	2	1	2	1	2	2	1	1	1	1	2	2	1	1	1	
Teacher Name	Anuja Bhalerao	CO3	1	1	1	2	1	1	2	1	2	1	2	1	1	2	2	
Course Outcomes		CO4	2	2	1	1	2	2	1	2	2	2	1	2	2	1	1	

	CO1	Biophysics should be apply the principles of physical sciences to understand and solve biological complexities	CO5	1	1	2	1	2	2	1	1	2	1	1	2	1	2	1
	CO2	Using the knowledge gained during the course, students should be able to address the academic and industrial research problems	Average	1.40	1.40	1.40	1.20	1.60	1.60	1.40	1.20	1.80	1.40	1.40	1.80	1.40	1.60	1.40
	CO3	Perform experiments which involve making correct and appropriate use of a range of scientific equipment, keeping an accurate record of experimental work and analysing results and reaching non-trivial conclusions from them.																
	CO4	Communicate at an advanced level the results of both theoretical and experimental work in various forms including written reports, oral presentations and poster presentations.																
	CO5	Collaborate effectively with team members for scientific investigations and for the process of learning.																

Class	F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs			
Subject Code	BBt 105		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Animal Sciences I	CO1	1	1	1	1	1	1	2	1	2	2	1	2	2	2	2	
Semester No	I	CO2	2	1	2	1	2	2	1	1	1	1	2	2	1	1	1	
Teacher Name	Prashant Katke	CO3	1	1	1	1	1	1	2	1	2	1	2	1	1	2	2	
Course Outcomes		CO4	1	1	1	1	1	1	1	2	2	2	1	2	2	1	1	
	CO1	The interdisciplinary nature of biotechnology integrates living systems including animals and their studies.	CO5	2	22	1	1	1	1	1	1	2	1	1	2	1	2	2

	CO2	Be able to understand knowledge in basic and applied aspects of animal sciences.	Average	1.40	5.20	1.20	1.00	1.20	1.20	1.40	1.20	1.80	1.40	1.40	1.80	1.40	1.60	1.60
	CO3	the students will understand the scientific responsibilities and social awareness about animals and their diversity.																
	CO4	students will learn various model organisms, parasitic behavior of animal in humans.																
	CO5	Students learn Animal diversity as a source of food, Textiles, Shelter etc.																

Class		F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 106			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Plant Sciences I		CO1	3	2	1	2	1	1	2	1	2	1	1	2	1	3	2
Semester No	I		CO2	2	1	3	2	2	1	1	1	1	2	2	1	1	1	
Teacher Name	Jyotsna Galande		CO3	1	1	2	1	1	1	2	1	2	1	2	1	2	2	
Course Outcomes			CO4	2	2	2	1	2	2	1	2	2	1	2	2	1	2	
	CO1	Be able to formulate original questions about plants into empirically testable hypotheses.	CO5															
	CO2	They will be able to collect and analyze data obtained from original research, and translate and apply experimental data to advance the field and solve real-world problems.	Average	2.00	1.60	2.00	1.40	1.60	1.40	1.40	1.20	1.80	1.20	1.60	1.80	1.20	1.80	1.60
	CO3	Student will synthesize and apply knowledge to better understand and manage plant-based systems.																
	CO4	Learning and getting familiar with morphology & plant cell.																
	CO5	Knowledge about unique, silent features and chemical compositions of cell wall.																

Class		F.Y.B.Sc.Biotechnology		Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 107		PO1		PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Microbiology I		CO1	3	2	1	2	1	1	2	1	2	1	1	2	1	3	2	
Semester No	I		CO2	2	1	3	2	2	1	1	1	1	2	2	2	1	1	1	
Teacher Name	Asmita Gavhane		CO3	1	2	2	1	1	3	2	1	2	1	2	1	2	2		
Course Outcomes			CO4	2	2	2	3	2	2	1	2	2	2	1	2	2	3	2	
	CO1	The student will be able to understand hisotry of use of microoranisms in nature and human life	CO5	2	2	2	1	2	2	1	1	2	1	2	2	1	2	1	
	CO2	The students will kow about significant role of microbes in nature	Average	2.00	1.80	2.00	1.80	1.60	1.80	1.40	1.20	1.80	1.40	1.60	1.80	1.20	2.20	1.60	
	CO3	Be able to understand what is Microbiology and various branches and scope of subject																	
	CO4	The students will learn about types of microoraganisms and thier significance The students will know about similarities and differences about microorganisms																	
	CO5	The students will understand about bacterial ultrastructure.																	

Class		F.Y.B.Sc.Biotechnology		Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 108		PO1		PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Biomathematics and Biostatistics-I		CO1	3	2	1	2	1	1	2	1	2	1	1	2	1	3	2	
Semester No	I		CO2	2	1	3	2	2	1	1	1	1	2	2	2	1	1	1	
Teacher Name	khan farheen		CO3	1	2	2	1	1	3	2	1	2	1	2	1	2	2		
Course Outcomes			CO4	2	1	2	3	2	2	1	2	2	2	1	2	2	3	2	
	CO1	Be able to communicate mathematical and logical ideas in writing.	CO5	2	2	2	1	2	2	1	1	2	1	2	2	1	2	1	
	CO2	Be able to apply problem solving and logical skills.	Average	2.00	1.60	2.00	1.80	1.60	1.80	1.40	1.20	1.80	1.40	1.60	1.80	1.20	2.20	1.60	
	CO3	Have a deeper understanding of mathematical theory.																	
	CO4	Have a solid knowledge of elementary statistics.																	

	CO5	They will able to choose and apply appropriate statistical methods for analyzing one or two variables.6.They use technology to perform descriptive and inferential data analysis for one or two variables.
--	-----	--

Class		F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 109			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical in Chemistry andBiochemistry -I		CO1	1	1	2	1	1	2	2	2	2	1	2	2	2	1	2
Semester No	I		CO2	1	2	1	2	2	1	1	1	1	2	2	2	1	1	1
Teacher Name	Komal Sonawane		CO3	2	1	1	1	1	2	2	1	2	1	2	1	1	2	1
Course Outcomes			CO4	1	1	1	2	2	2	1	2	2	2	1	2	2	2	1
	CO1	Increase students practical or laboratory experience or exposure.	CO5	1	1	1	1	1	2	1	1	2	1	1	1	1	2	2
	CO2	To develop basic practical biochemical skills for the handling and analysis of biomolecules.	Average	1.20	1.20	1.20	1.40	1.40	1.80	1.40	1.40	1.80	1.40	1.60	1.60	1.40	1.60	1.40
	CO3	Enhance student's practical laboratory skills and equipment or instrument use.																
	CO4	They will understand the methodology of a scientific experiments.																
	CO5	To establish an understanding of the quantitative aspects of biochemical analyses																

Class		F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 110			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practicals in Plant and Animalscience		CO1	2	1	2	1	2	2	1	2	1	1	2	2	2	1	2
Semester No	I		CO2	1	2	2	2	2	1	1	1	1	2	2	2	1	1	1
Teacher Name	Prashant Katke and Jyotsna Galande		CO3	2	1	1	1	1	2	2	1	2	1	2	1	3	2	1
Course Outcomes			CO4	1	1	2	2	2	2	1	2	1	2	1	2	2	2	1
	CO1	The students will learn practical or laboratory experience or	CO5	1	1	1	1	1	2	1	1	2	1	1	1	1	2	2

	CO2	The student will learn to test water hardness , pH meter, colorimetry and applications	Average	1.40	1.20	1.60	1.40	1.60	1.80	1.20	1.40	1.40	1.40	1.60	1.60	1.80	1.60	1.40
	CO3	The students will learn about solution and reagent preparations																
	CO4	The student will learn isolation and study about biomolecules from plant sources																
	CO5	To establish an understanding of the quantitative aspects of biochemical analyses.																

Class		F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 111			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical In Microbiology & Biostatistics-I		CO1	2	1	2	1	1	2	2	2	2	1	1	1	2	1	2
Semester No	I		CO2	1	2	1	2	2	1	1	1	1	2	1	2	1	1	1
Teacher Name	Asmita Gavhane and Khan Fareen		CO3	2	1	1	1	1	2	2	1	2	1	1	1	1	2	2
Course Outcomes			CO4	1	1	2	2	2	2	1	2	2	2	1	2	2	2	1
	CO1	the student will understand basic laboratory rules and practices in microbiology.	CO5															
	CO2	The students will learn use of glasswares, instruments and their application commonly use in microbiology laboratory	Average	2	1	1	1	1	1	1	1	2	1	2	1	1	2	2
	CO3	To learn practical skill for observation of microorganisms by using various staining method and		1.60	1.20	1.40	1.40	1.40	1.60	1.40	1.40	1.80	1.40	1.20	1.40	1.40	1.60	1.60
	CO4	The students will know method of handling of microorganisms and biosafety measures																
	CO5	The will understand how to apply the scientific method and hypothesis testing in the design and execution of experiments																

Class		F.Y.B.Sc.Biotechnology		Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 112		PO1		PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Practical In Physics and Biophysics		CO1	1	1	1	2	1	1	2	1	2	1	2	1	2	1	2	
Semester No	I		CO2	1	2	1	1	2	1	1	1	1	2	1	2	1	1	1	
Teacher Name	Shaikh Iram		CO3	2	1	2	1	1	2	2	1	2	1	1	1	2	2		
Course Outcomes			CO4	1	2	2	2	2	2	1	2	1	2	1	2	2	3	1	
	CO1	To gain practical knowledge by applying the experimental methods to correlate with the Physics theory.	CO5	1	1	1	1	1	1	1	1	2	1	2	1	1	2	2	
	CO2	To learn the usage of electrical and optical systems for various measurements.	Average	1.20	1.40	1.40	1.40	1.40	1.40	1.40	1.20	1.60	1.40	1.40	1.40	1.40	1.80	1.60	
	CO3	To learn about travelling microscope																	
	CO4	The students will learn to determine diffusion pressure, surface tension																	
	CO5	The students will learn about osmosis, dialysis and use of GM counter																	

Class		F.Y.B.Sc.Biotechnology		Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 201		PO1		PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Fundamentals of Chemistry II		CO1	3	2	1	2	1	1	2	1	2	1	1	2	1	3	2	
Semester No	II		CO2	2	1	3	2	2	1	1	2	1	2	2	2	1	1	1	
Teacher Name	Komal Sonawane		CO3	1	2	2	1	1	3	2	1	2	1	2	1	2	2		
Course Outcomes			CO4	2	2	2	3	2	2	1	2	2	2	1	2	2	3	2	
	CO1	To learn in detail about the first and second laws of Chemical Thermodynamics and the related terms; to get idea about thermo-chemistry and thermodynamic relationships and system of variable compositions.	CO5	2	2	2	1	2	2	1	1	2	1	2	2	1	2	1	

	CO2	To learn experimentally how to do the potentiometric and conductometric titrations of different compositions, determine the Ka of weak acid and heat of neutralization of a strong acid by a strong base.	Average	2.00	1.80	2.00	1.80	1.60	1.80	1.40	1.40	1.80	1.40	1.60	1.80	1.20	2.20	1.60
	CO3	To understand about different types of electrophilic and nucleophilic aromatic substitution reactions, reaction intermediates and their mechanisms.																
	CO4	To study the properties and reactions of carbonyl compounds and corresponding reaction mechanisms.																
	CO5	To learn preparations, reactions and corresponding reaction mechanisms of organometallic compounds.																

Class		F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 202			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Biochemistry II		CO1	3	2	1	2	1	1	2	1	2	1	1	2	1	3	2
Semester No	II		CO2	2	1	3	2	2	1	1	2	1	2	2	2	1	1	2
Teacher Name	Komal Sonawane		CO3	1	2	2	1	1	3	2	1	2	1	2	1	2	2	
Course Outcomes			CO4	2	3	2	3	2	2	1	2	2	2	1	2	2	3	2
	CO1	student will be able to understand:nature of biochemistry	CO5	2	2	2	1	2	2	1	1	2	1	2	2	1	2	1
	CO2	physical and chemical properties of molecules as a linkage of biochemistry	Average	2.00	2.00	2.00	1.80	1.60	1.80	1.40	1.40	1.80	1.40	1.60	1.80	1.20	2.20	1.80
	CO3	concept and properties of acid-base relationship																
	CO4	students shall be able to assess and relate the concepts of chemistry to biology. identify the structures of amino acids, their chemical properties and their organization into polypeptides and proteins.																
	CO5	understand the structure and functions of fundamental mono, di and trisaccharide and polysaccharides.																

Class		F.Y.B.Sc.Biotechnology		Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 203		PO1		PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Bioinstrumentation		CO1	2	2	1	2	1	1	2	1	2	1	1	2	1	3	2	
Semester No	II		CO2	2	1	1	2	2	1	1	2	1	2	2	2	1	1	2	
Teacher Name	Anuja Bhalerao		CO3	1	2	1	1	1	3	2	1	2	1	2	1	2	2		
Course Outcomes			CO4	1	3	2	3	2	2	1	2	2	2	1	2	2	1	2	
	CO1	To learn Design and understand biomedical instruments that comply with the regulatory standards for medical devices.	CO5	2	2	2	1	2	2	1	1	2	1	2	2	1	2	1	
	CO2	Describe the key considerations for biological signal generation and measurements.	Average	1.60	2.00	1.40	1.80	1.60	1.80	1.40	1.40	1.80	1.40	1.60	1.80	1.20	1.80	1.80	
	CO3	To learn Design and apply knowledge within the context of a biomedical device.																	
	CO4	An understanding of biomedical instrumentation principles in aspects of device design and applications.																	
	CO5	To understand thermoregulation mechanisms in body and their control																	

Class		F.Y.B.Sc.Biotechnology		Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 204		PO1		PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Animal Sciences II		CO1	2	2	1	2	1	1	2	1	2	1	1	2	1	2	2	
Semester No	II		CO2	2	1	1	2	2	1	1	2	1	2	2	2	1	1	2	
Teacher Name	Prashant Katke		CO3	1	2	1	1	1	2	2	1	2	1	2	1	2	2		
Course Outcomes			CO4	1	2	2	3	2	2	1	2	2	2	1	2	2	1	2	
	CO1	The students learn integrated principles of nutrition and physiology define issues, enable reasoning, and devise solutions for progress in animal health and production	CO5	2	2	2	1	2	2	1	1	2	1	2	2	1	2	1	
	CO2	Demonstrate hands-on skills for optimal care and management of farm and companion animals	Average	1.60	1.80	1.40	1.80	1.60	1.60	1.40	1.40	1.80	1.40	1.60	1.80	1.20	1.60	1.80	

	CO3	Communicate effectively to deliver evolving scientific content in animal science to producers and the public
	CO4	Employ analytical skills to think critically, identify knowledge gaps and devise solutions to animal-related issues relevant to health and well-being of society.
	CO5	Apply principles of animal welfare to guide evolving practices for the ethical treatment and management of animals

Class		F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 205			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Plant Sciences II		CO1	2	2	1	2	1	1	2	1	2	1	1	2	1	2	1
Semester No	II		CO2	2	1	1	2	2	1	1	2	1	2	2	2	1	1	2
Teacher Name	Jyotsna Galande		CO3	1	2	1	1	1	2	2	1	2	1	2	1	2	1	
Course Outcomes			CO4	1	2	2	2	2	2	1	2	2	2	1	2	2	1	2
	CO1	To understand the plants and plant cells in relation to water	CO5	3	2	2	1	2	2	1	1	2	1	2	2	1	2	1
	CO2	Understand the process of photosynthesis in higher plants with particular emphasis on light and dark reactions, C3 and C4 pathways	Average	1.80	1.80	1.40	1.60	1.60	1.60	1.40	1.40	1.80	1.40	1.60	1.80	1.20	1.60	1.40
	CO3	Understand the respiration in higher plants with particular emphasis on aerobic and anaerobic respiration																
	CO4	Learn and understand about mineral nutrition in plants.																
	CO5	To understand the economic importance of Cereals, Pulses, Oil seeds, Fiber plants, Medicinal Plants, Timber yielding, Beverages with examples																

Class		F.Y.B.Sc.Biotechnology		Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 206		PO1		PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Microbiology II		CO1	2	2	1	2	1	1	2	1	2	1	1	2	1	2	1	
Semester No	II		CO2	2	1	1	2	2	1	1	2	1	2	2	2	1	1	2	
Teacher Name	Asmita Gavhane		CO3	1	1	1	1	1	2	2	1	2	1	2	1	2	2	1	
Course Outcomes			CO4	1	2	2	2	2	2	1	2	1	2	1	2	2	1	2	
	CO1	The students will learn about design of media for bacteria and fungi	CO5	3	2	2	1	2	2	1	1	2	1	2	2	1	2	1	
	CO2	The student will have knowledge about nutritional classification of bacteria	Average	1.80	1.60	1.40	1.60	1.60	1.60	1.40	1.40	1.60	1.40	1.60	1.80	1.40	1.60	1.40	
	CO3	The student will learn about Growth and reproduction of microorganisms																	
	CO4	The student will have knowledge of different sterilization methods and e																	
	CO5	The student will learn about antibiotics and their types																	

Class		F.Y.B.Sc.Biotechnology		Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 207		PO1		PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Biomathematics and BiostatisticsII		CO1	2	2	3	2	2	3	1	1	2	3	2	3	1	3	2	
Semester No	II		CO2	2	3	2	3	3	2	1	2	2	1	2	3	2	2	2	
Teacher Name	Khan Farheen		CO3	1	3	3	3	2	2	3	2	2	1	2	2	2	1	3	
Course Outcomes			CO4	2	2	3	3	3	2	3	2	2	1	2	2	2	3	2	
	CO1	Be able to communicate mathematical and logical ideas in writing.	CO5	3	3	2	3	3	2	2	2	2	2	2	3	2	2	3	
	CO2	Be able to apply problem solving and logical skills.	Average	2.00	2.60	2.60	2.80	2.60	2.20	2.00	1.80	2.00	1.60	2.00	2.60	1.80	2.20	2.40	
	CO3	Have a deeper understanding of mathematical theory.																	
	CO4	Have a solid knowledge of elementary statistics.																	
	CO5	They will able to choose and apply appropriate statistical methods for analyzing one or two variables.6.They use technology to perform descriptive and inferential data analysis for one or two variables.																	

Class		F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 208			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Computers in Biology		CO1	2	1	3	2	2	1	1	1	2	3	2	1	1	1	1
Semester No	II		CO2	2	2	1	3	1	1	1	2	2	1	2	1	2	2	2
Teacher Name	Khan Farheen		CO3	1	2	1	1	2	2	2	2	1	1	1	2	1	1	1
Course Outcomes			CO4	2	1	3	1	1	2	3	1	2	1	2	2	2	2	2
	CO1	Develop ability to analyze a problem, identify and define the computing requirements, which may be appropriate to its solution.	CO5															
	CO2	To prepare students to undertake careers involving problem solving using computer science and technologies.	Average	3	3	2	3	3	2	2	2	2	2	2	3	2	2	3
	CO3	Develop ability to pursue advanced studies and research in computer science.		2.00	1.80	2.00	2.00	1.80	1.60	1.80	1.60	1.80	1.60	1.80	1.80	1.60	1.60	1.80
	CO4	To understand biological information stored in various databases is available online through internet																
	CO5	Students learn computational biology refers to the hypothesis based investigation of a specific biological problem using computers																

Class		F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 209			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical in Chemistry and Biochemistry -II		CO1	2	1	2	2	2	1	1	1	2	1	2	1	1	2	1
Semester No	II		CO2	2	2	1	3	1	1	1	2	2	1	2	1	2	2	2
Teacher Name	Komal Sonawane		CO3	1	2	1	1	2	2	2	2	1	1	1	2	1	1	1
Course Outcomes			CO4	2	1	3	1	1	2	2	1	1	1	2	2	2	1	2
	CO1	Increase students practical or laboratory experience or exposure.	CO5															
	CO2	To develop basic practical biochemical skills for the handling and analysis of biomolecules.	Average	1	3	2	1	3	2	1	2	2	2	2	2	1	2	1
				1.60	1.80	1.80	1.60	1.80	1.60	1.40	1.60	1.60	1.20	1.80	1.60	1.40	1.60	1.40

	CO3	Enhance student's practical laboratory skills and equipment or instrument use.
	CO4	They will understand the methodology of a scientific experiments.
	CO5	To establish an understanding of the quantitative aspects of biochemical analyses

Class		F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 210			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical In Plant and Animal science II		CO1	1	2	2	1	2	2	1	1	2	1	2	1	1	1	
Semester No	I		CO2	2	2	1	1	1	1	1	2	2	1	2	1	2	2	
Teacher Name	Prashant Katke and Jyotsna Galande		CO3	1	2	1	2	2	1	2	2	1	1	2	1	1	1	
Course Outcomes			CO4	2	1	2	1	1	2	1	1	2	1	2	2	2	2	
	CO1	To study the process of osmosis, turgor pressure and diffusion pressure .	CO5	3	3	2	1	1	1	2	2	2	2	2	1	2	2	
	CO2	To determine of rate of respiration	Average	1.80	2.00	1.60	1.20	1.40	1.40	1.40	1.60	1.80	1.20	1.80	1.40	1.60	1.40	
	CO3	To study about economically important plants.																
	CO4	To study of <i>Plasmodium</i> sps, <i>Fasciola</i> sp. Honey Bee.																
	CO5	To study about collection classification and preservation of insects.																

Class		F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 211			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical In Microbiology & Bioinstrumentation		CO1	1	1	1	2	2	1	1	1	2	2	2	1	1	1	
Semester No	II		CO2	2	2	1	3	1	1	1	2	1	1	2	1	2	2	
Teacher Name	Asmita Gavhane and Komal Sonawane		CO3	1	2	1	1	2	2	2	2	1	1	2	1	1	1	
Course Outcomes			CO4	2	1	3	1	1	2	1	1	2	1	2	2	2	2	
	CO1	The students will learn about preparation of Bacterial and fungal growth media	CO5	1	3	2	3	2	2	2	2	2	2	2	1	2	2	
	CO2	The students will learn Aseptic transfer techniques	Average	1.40	1.80	1.60	7.60	1.60	1.60	1.40	1.60	1.60	1.40	1.80	1.40	1.60	1.40	

	CO3	The students will learn to demonstrate of microbes from various sources
	CO4	The students will learn different cultivation and enumeration techniques of microorganisms.
	CO5	The students will learn about working and components of various types of centrifuge and microscopes.

Class		F.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt 212			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical In Computer & Biostatistics		CO1	1	2	3	2	2	1	1	1	2	2	1	1	1	1	2
Semester No	II		CO2	1	2	1	2	1	1	1	2	2	1	2	1	2	2	1
Teacher Name	Khan Farheen		CO3	2	1	1	1	1	2	2	2	1	1	1	2	1	2	1
Course Outcomes			CO4	1	1	3	1	1	3	1	1	2	1	2	2	2	1	1
	CO1	The Information Technology prepares a student for basic knowledge using computer to solve data processing problems in life.	CO5	1	2	2	1	2	2	2	2	1	2	2	3	1	1	2
	CO2	Demonstrate a knowledge and understanding of using computers to solve problems related to practical applications.	Average	1.20	1.60	2.00	1.40	1.40	1.80	1.40	1.60	1.60	1.40	1.60	1.80	1.40	1.40	1.40
	CO3	Choose and apply appropriate statistical methods for analyzing one or two variables.																
	CO4	Interpret statistical results correctly, effectively, and in context.																
	CO5	The student will learn Hypothesis testing how to analyse scientific data																

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

Class		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt- 301			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Cell biology-I	CO1	1	1	1	1	1	1	1	1	2	1	1	2	1	2	2	
Semester No	III	CO2	1	2	2	1	2	1	1	1	1	1	2	2	1	1	1	
Teacher Name	Rajashri Bhope	CO3	1	1	1	1	1	1	2	1	2	1	2	1	2	2	2	
Course Outcomes		CO4	2	2	2	1	2	2	1	2	1	2	1	2	2	1	1	
	CO1	This course introduces the stu	CO5	2	1	1	1	1	1	1	2	1	1	2	1	2	1	
	CO2	This gives them a strong foun	Average	1.40	1.40	1.40	1.00	1.40	1.20	1.20	1.20	1.60	1.20	1.40	1.80	1.40	1.40	
	CO3	At the end of the course, the student has a strong foundation on the functions of the cell.																
	CO4	To understand the structures and purposes of basic components of eukaryotic cells, especially macromolecules, membranes, and organelles																
	CO5	To understand structure and function of various cell organelle.																

Class		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-302			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Molecular Biology I	CO1	1	2	2	1	2	1	2	1	1	2	1	2	2	2	2	
Semester No	III	CO2	1	2	2	1	2	2	1	1	1	1	2	2	1	1	2	
Teacher Name	Rajashri Bhope	CO3	2	1	1	2	1	1	2	1	2	2	2	1	2	2	1	
Course Outcomes		CO4	1	2	1	1	2	2	1	2	1	2	1	2	1	1	2	
	CO1	To understand the structure of DNA through Watson & Crick model	CO5	1	1	2	1	2	1	3	2	2	1	2	2	1	2	
	CO2	The course teaches the students about genes, and genome organization and comparison of these in different organisms	Average	1.20	1.60	1.60	1.20	1.80	1.40	1.80	1.40	1.40	1.60	1.60	1.80	1.40	1.60	
	CO3	They learn about structure and function of DNA, RNA																

	CO4	It mainly describe central dogma of biology in eukaryotic and prokaryotes.
	CO5	Students learn about basic replication process

Class		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-303			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Genetics		CO1	1	2	2	1	2	1	2	1	1	2	1	2	2	2	1
Semester No	III		CO2	2	2	2	1	2	2	1	2	1	1	2	2	1	1	2
Teacher Name	Komal Sonawane		CO3	2	1	2	2	1	1	2	1	2	2	2	1	2	2	1
Course Outcomes			CO4	1	2	1	1	2	2	1	2	2	2	1	2	1	1	2
	CO1	To understand the structure of DNA through Watson & Crick model	CO5	1	1	2	1	2	1	1	2	2	1	2	2	1	2	3
	CO2	The course teaches the students about genes, and genome organization and comparison of these in different organisms	Average	1.40	1.60	1.80	1.20	1.80	1.40	1.40	1.60	1.60	1.60	1.60	1.80	1.40	1.60	1.80
	CO3	They learn about structure and function of DNA, RNA																
	CO4	It mainly describe central dogma of biology in eukaryotic and prokaryotes.																
	CO5	Students learn about basic replication process																

Class		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-304			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Metabolism		CO1	2	2	2	1	2	1	2	1	1	1	1	2	2	2	
Semester No	III		CO2	2	1	1	1	1	2	2	2	1	2	2	1	1	1	
Teacher Name	Komal Sonawane		CO3	1	1	2	2	1	1	2	3	1	2	1	2	2	1	
Course Outcomes			CO4	1	2	1	1	2	2	1	2	2	1	1	2	1	1	1

	CO1	The student will be able to learn Carbohydrate catabolism, and its association with cellular energy production, and carbohydrate anabolism in plants and animal cells.	CO5	3	1	2	1	2	1	1	2	2	1	2	1	1	2	3
	CO2	The student will be able to learn Lipid biosynthesis, acids and cholesterol, ketone bodies, acidosis, ketosis Degradation of fatty	Average	1.80	1.40	1.60	1.20	1.60	1.40	1.60	2.00	1.40	1.40	1.40	1.40	1.40	1.60	1.60
	CO3	The student will learn and understand about the Biosynthesis of purines and pyrimidine nucleotides, degradation of nucleotides, salvage pathways, biosynthesis and biodegradation of amino acids. Inborn errors of metabolism.																
	CO4	It helps the students in appreciating the integrated approach of interrelated pathways of catabolism and anabolism																
	CO5	It also emphasizes on metabolic disorders at molecular level.																

Class	SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs			
Subject Code	BBt-305		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	EnvironmentalBiotechnology	CO1	2	2	1	1	1	1	2	1	2	1	1	2	1	1	2	
Semester No	III	CO2	1	1	2	1	2	1	1	1	1	1	2	2	1	1	1	
Teacher Name	Jyotsna Galande	CO3	1	1	1	1	1	1	2	1	2	1	2	1	1	2	2	
Course Outcomes		CO4	1	2	2	1	2	2	1	2	1	1	1	2	2	2	1	
	CO1	Students after learning this course able to	CO5	1	1	2	1	2	2	1	1	2	1	1	2	1	2	1

	CO2	1. Understand ecosystems and chains. They would understand and analyze environmental relationships with a better assessment of the mechanisms of environmental components like atmosphere, hydrosphere and lithosphere.	Average	1.20	1.40	1.60	1.00	1.60	1.40	1.40	1.20	1.60	1.00	1.40	1.80	1.20	1.60	1.40
	CO3	2. Classify microbes according to energy source and carbon source and evaluate energy outcome of the energy metabolism according to electron acceptor and electron donor usage.																
	CO4	3. Describe suitable methods for characterizing the activity, function, diversity, and composition of microbial communities																
	CO5	4. Explain the microbial processes and growth requirements underlying the activated sludge process, nitrification, denitrification, enhanced phosphorus removal, and anaerobic digestion																

Class		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt- 306	PO1		PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Bioanalytical techniques	CO1	1	2	2	1	2	1	2	1	2	2	1	1	2	1	1	
Semester No	III	CO2	2	1	2	1	2	2	2	2	1	1	2	2	2	1	1	
Teacher Name	Komal Sonawane	CO3	1	2	2	2	1	1	2	1	2	1	1	1	2	2	2	
Course Outcomes		CO4	3	2	1	1	2	2	1	2	1	2	2	2	1	1	2	
	CO1	Students will be able to diagnose a specific biochemical genetic disorder	CO5	2	1	2	1	1	2	1	2	1	1	2	1	2	1	
	CO2	Students will be able to develop technical aspects of analyses for a diagnostic biochemical laboratory	Average	1.80	1.60	1.80	1.20	1.60	1.60	1.60	1.60	1.40	1.40	1.60	1.40	1.80	1.20	1.40
	CO3	Students will be able to handle various equipment's used in biochemical analysis and troubleshoot them																

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		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code		BBt-307	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name		AECC-I (Environment)	CO1	2	2	1	2	2	1	2	1	2	2	1	1	2	2	1
Semester No		III	CO2	2	1	1	1	2	2	1	2	1	1	2	2	1	1	2
Teacher Name		Jyotsna Galande	CO3	1	2	2	2	1	1	2	1	2	2	1	1	2	2	1
Course Outcomes			CO4	2	1	1	1	2	2	1	2	1	1	2	2	1	1	2
	CO1	Build awareness about environment, scope, and importance for sustainable development	CO5															
	CO2	Students will understand ecology, biogeography, and ecosystem structure. This will provide the awareness on ecological and historical foundations for understanding the distribution and abundance of species and the changes in their distribution and abundance over time and climatic impact.	Average	1.80	1.40	1.40	1.40	1.80	1.60	1.40	1.60	1.40	1.40	1.60	1.40	1.60	1.40	1.60
	CO3	Gaining knowledge to assess the conditions and trends of biodiversity either globally or sub globally and																
	CO4	To develop environment awareness																
	CO5	to understand it's necessity to measure the abundance of all organisms over space and time.																

Class		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code		BBt-308	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name		AECC-II (Language Communication)	CO1	2	2	1	1	1	1	2	1	2	1	1	2	1	1	2
Semester No		III	CO2	1	1	2	1	2	1	1	1	1	1	2	2	1	1	1

Teacher Name	Parag Athawale	CO3	1	1	1	1	1	1	2	1	2	1	2	1	1	2	2	
Course Outcomes		CO4	1	2	2	1	2	2	1	2	1	1	1	2	2	2	1	
	CO1	To enable speaking and writing grammatically correct sentences in English	CO5	1	1	2	1	2	2	1	1	2	1	1	2	1	2	1
	CO2	To develop effective writing skills.	Average	1.20	1.40	1.60	1.00	1.60	1.40	1.40	1.20	1.60	1.00	1.40	1.80	1.20	1.60	1.40
	CO3	To build fluency in English.																
	CO4	Students would build spoken and written competency in English.																
	CO5	To build scientific writing skill																

Class	SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs			
Subject Code	BBt-309		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Practical in Cell Biology and Genetics	CO1	2	2	1	1	2	1	2	1	2	1	1	2	1	1	2	
Semester No	III	CO2	2	1	2	3	2	1	1	1	1	1	2	2	2	2	1	
Teacher Name	Komal Sonawane and Rajashri Bhope	CO3	1	3	1	1	1	2	2	1	2	3	2	1	1	2	2	
Course Outcomes		CO4	1	2	2	2	2	2	1	2	1	1	1	2	2	2	1	
	CO1	Student will able to study of Prokaryotic and Eukaryotic cell structure	CO5	1	1	2	1	2	2	1	1	2	2	1	2	1	2	3
	CO2	Along with this they will also learn protein estimation and separation methods.	Average	1.40	1.80	1.60	1.60	1.80	1.60	1.40	1.20	1.60	1.60	1.40	1.80	1.40	1.80	1.80
	CO3	Student will able to prepare reagent																
	CO4	Student will able to study karyotype analysis																
	CO5	Observation of cells under microscope																

Class	SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-310		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical in Bio analytical Techniques	CO1	2	2	1	1	2	1	2	1	2	1	1	2	1	1	2
Semester No	III	CO2	1	1	2	3	2	1	1	2	1	1	2	1	2	2	1
Teacher Name	Komal Sonawane	CO3	2	3	1	1	1	2	2	1	2	3	1	1	1	1	2

Course Outcomes			CO4	3	2	2	2	2	2	1	2	1	1	1	2	2	2	1
	CO1	Practical in Bio analytical Techniques	CO5	1	1	2	1	2	2	1	1	2	2	1	2	1	2	3
	CO2	To provide scientific understanding of analytical techniques and detail interpretation of results	Average	1.80	1.80	1.60	1.60	1.80	1.60	1.40	1.40	1.60	1.60	1.20	1.60	1.40	1.60	1.80
	CO3	To be able to use selected analytical techniques. 2. Familiarity with working principals, tools and techniques of analytical techniques.																
	CO4	To understand the strengths, limitations and creative use of techniques for problem-solving																
	CO5	Student will able to determine λ max of Protein, solutions using spectrophotometer																

Class	SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs			
Subject Code	BBt-311		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Practical in Molecular Biology and Environmental Biotechnology	CO1	1	2	1	1	2	2	2	1	2	1	1	2	1	1	2	
Semester No	III	CO2	1	1	2	3	2	1	1	2	1	1	2	1	2	2	1	
Teacher Name	Rajashri Bhope and Jyostna Galande	CO3	2	3	1	1	1	2	2	1	2	3	1	2	1	1	2	
Course Outcomes		CO4	2	2	2	2	2	2	1	2	1	2	1	2	2	2	2	
	CO1	Prepare lab solutions and reagent	CO5	1	1	2	1	2	2	1	1	2	2	1	2	1	2	3
	CO2	Understanding instructions and operate DNA equipment	Average	1.40	1.80	1.60	1.60	1.80	1.80	1.40	1.40	1.60	1.80	1.20	1.80	1.40	1.60	2.00
	CO3	Use statistical methods to analyze genetic data.																
	CO4	Use computer and internet to search the latest information in DNA																
	CO5	Student will able to study polluted and unpolluted soil by physical and chemical properties																

Class	SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-401		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Cell biology II	CO1	2	2	1	1	1	1	2	1	2	1	1	2	1	1	2

Semester No	IV	CO2	1	1	2	1	2	1	1	1	1	1	2	2	1	1	1
Teacher Name	Rajashri Bhope	CO3	1	1	1	1	1	1	2	1	2	1	2	1	1	2	2
Course Outcomes		CO4	1	2	2	1	2	2	1	2	1	1	1	2	2	2	1
	CO1	Student will understand the basis of cell division and regulation	CO5	1	1	2	1	2	2	1	1	2	1	1	2	1	2
	CO2	Students acquire knowledge of cell signalling and receptors	Average	1.20	1.40	1.60	1.00	1.60	1.40	1.40	1.20	1.60	1.00	1.40	1.80	1.20	1.60
	CO3	Relate how cell movement and cell-cell communication occur and discuss mechanisms of signal transduction.															
	CO4	Outlines the processes that controls eukaryotic cell cycle, apoptosis including better understanding of cancer															
	CO5	will understand the concept of cell death and apoptosis															

Class	SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-402	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Molecular biology-II	CO1	2	2	1	1	1	1	2	1	2	1	1	2	1	1	2
Semester No	IV	CO2	1	1	2	1	2	1	1	1	1	1	2	2	1	1	1
Teacher Name	Rajashri Bhope	CO3	1	1	1	1	1	1	2	1	2	1	2	1	1	2	2
Course Outcomes		CO4	1	2	2	1	2	2	1	2	1	1	1	2	2	2	1
	CO1	Students will focus on the transcription process	CO5	1	1	2	1	2	2	1	1	2	1	1	2	1	2
	CO2	Will understand regulation of gene expression	Average	1.20	1.40	1.60	1.00	1.60	1.40	1.40	1.20	1.60	1.00	1.40	1.80	1.20	1.60
	CO3	Will gain the knowledge on translation process															
	CO4	Will know about the DNA damage and repair															
	CO5	Can differentiate between prokaryotic and eukaryotic molecular processes															

Class	SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-403	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3

Subject Name	Immunology	CO1	2	2	1	1	1	1	2	1	2	1	1	2	1	1	2	
Semester No	IV	CO2	1	1	2	1	2	1	1	1	1	1	2	2	1	1	1	
Teacher Name	Rajashri Bhope	CO3	1	1	1	1	1	1	2	1	2	1	2	1	1	2	2	
Course Outcomes		CO4	1	2	2	1	2	2	1	2	1	1	1	2	2	2	1	
	CO1	To promote critical thinking among students	CO5	1	1	2	1	2	2	1	1	2	1	1	2	1	2	1
	CO2	to provide students with a foundation in immunological processes;	Average	1.20	1.40	1.60	1.00	1.60	1.40	1.40	1.20	1.60	1.00	1.40	1.80	1.20	1.60	1.40
	CO3	to provide students with knowledge on how the immune system works building on their previous knowledge from biochemistry, genetics, cell biology and microbiology;																
	CO4	be able to clearly state the role of the immune system;																
	CO5	be able to compare and contrast the innate versus adaptive immune systems;																

Class	SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs			
Subject Code	BBt-404		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Animal development	CO1	2	2	1	1	1	1	2	1	2	1	1	2	2	1	2	
Semester No	IV	CO2	1	1	2	1	2	2	1	1	1	1	2	2	1	1	1	
Teacher Name	Katke Prashnat	CO3	1	1	1	3	1	1	2	1	2	3	2	1	1	2	2	
Course Outcomes		CO4	2	2	2	2	2	2	1	2	1	1	1	2	2	1	1	
	CO1		CO5	3	1	2	1	2	2	1	1	2	2	1	2	2	3	
	CO2	The course is so designed for acquiring knowledge to know the process of reproduction and the development of embryo.	Average	1.80	1.40	1.60	1.60	1.60	1.60	1.40	1.20	1.60	1.60	1.40	1.80	1.40	1.40	1.80
	CO3	The objective of this course is to provide a comprehensive understanding of the concepts of early animal development.																
	CO4	Students taking this course must develop a critical appreciation of methodologies specifically used to study the process of embryonic development in animals.																
	CO5	Understands about various concepts of genetics and its importance in human health																

Class		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code		BBt-405	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name		Plant development	CO1	2	2	1	1	1	1	2	1	2	1	1	2	2	1	2
Semester No		IV	CO2	1	1	2	1	2	2	1	1	1	1	2	2	1	3	1
Teacher Name		Jyotsna Galande	CO3	1	2	1	3	1	1	2	1	2	3	2	1	1	2	2
Course Outcomes			CO4	2	2	2	2	2	2	1	2	1	2	1	2	2	1	1
	CO1	Upon successful completion of this subject student should be able to acquire a deep knowledge in techniques, mechanisms and biotechnological methods in plant development as: Students well understood the principals and unique feature of development as they are able to describe the developmental process in plants.	CO5															
				3	1	2	1	2	2	1	2	2	2	1	2	1	2	3
	CO2	Students will become skilled at basic theoretical concepts about pattern formation in plants at vegetative and reproductive phases. Gained knowledge of all the stages of development and are able to identify specimen easily.	Average	1.80	1.60	1.60	1.60	1.60	1.60	1.40	1.40	1.60	1.80	1.40	1.80	1.40	1.80	1.80
	CO3	The basic development pathway understood and depicted with diagrams by studying the various model system.																
	CO4	Student understood the concept of microsporogenesis, Megasporogenesis, double fertilization, Endosperm development by performing various practical, identified the stages																

	CO5	Students are able to co-relate the knowledge of developmental biology with other subjects like Molecular biology, Biochemistry, physiology and Genetics.
--	-----	--

Class		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-406			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Microbial biotechnology		CO1	2	2	1	1	1	1	2	1	2	1	1	2	2	1	2
Semester No	IV		CO2	1	1	2	1	2	2	1	2	1	1	2	2	1	3	1
Teacher Name	Asmita Gavhane		CO3	2	2	1	3	1	1	2	1	2	3	2	1	2	2	2
Course Outcomes			CO4	2	2	2	2	2	2	1	2	1	2	1	2	2	1	1
	CO1	students will learn about applications of different microorganisms in various fields like food,dairy medical, industrial, pharmaceutical industries, environment and agricultural	CO5															
	CO2	students will acquire knowledge about food Microbiology like food spoilage, kinds of organisms involved for it,different methods of food preservation and factors affecting for the same	Average	3	1	2	1	2	2	1	2	2	2	1	2	1	2	3
	CO3	students will acquire knowledge about food Microbiology like food spoilage, kinds of organisms involved for it,different methods of food preservation and factors affecting for the same		2.00	1.60	1.60	1.60	1.60	1.60	1.40	1.60	1.60	1.80	1.40	1.80	1.60	1.80	1.80

	CO4	The students will be familiar with concepts in Dairy Microbiology like composition of milk,milk processing to obtain different milk products.They can understand sources of milk contamination, milk and milk product spoilage, preservation
	CO5	Students are able to understand the importance of Normal flora,and concepts of Medical microbiology. It helps students to understand various microbial causes behind infections and etiology of Infections. it includes all the details about cause,infection ,pathogenesis,transmission,laboratory diagnosis,treatment and preventive measures

Class		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-407	Subject Name		AECC-III (Environment)	Semester No	IV	Teacher Name	Anuja Bhalerao	Course Outcomes	CO4	CO5	CO1	CO2	CO3	CO4	CO5	PSO1	PSO2
			CO1	2	2	1	1	2	1	2	1	2	1	1	2	1	2	2
			CO2	1	2	1	2	2	2	1	2	1	2	2	1	2	2	2
			CO3	2	1	2	2	1	1	1	3	3	1	1	2	1	2	1
			CO4	1	2	1	2	1	2	2	1	1	3	1	1	2	1	2
		Upon successful completion of this subject student should be able to acquire: Student understood the concept of environmental pollution, types of pollutants and related hazards.	CO5	3	2	1	1	2	1	2	2	1	2	1	1	1	2	1

	CO2	Acquire knowledge on environment protection acts and understand the need to conserve environment by implementing policies with the help of different organizations.	Average	1.80	1.80	1.20	1.60	1.60	1.40	1.60	1.80	1.60	1.80	1.20	1.40	1.40	1.80	1.60
	CO3	Students will understand the structure, growth and the interactions of populations in the environment. Build awareness on disaster management, environmental movements and ethics.																
	CO4	Field visit enhance the skill techniques among the students to document assets, study local polluted site and ecosystem structure and environmental impact.																
	CO5	understand the balance between environment and ecosystem																

Class		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-408	Subject Name		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
		AECC- IV (Language Communication)	CO1	1	2	1	1	1	1	2	1	2	1	1	2	1	1	2
		IV	CO2	3	2	1	2	2	2	1	2	1	2	2	1	2	2	2
		Parag Aathwale	CO3	2	1	2	3	1	1	1	3	3	1	1	2	1	2	1
Course Outcomes			CO4	1	2	1	2	1	2	2	1	1	3	1	1	2	1	2
	CO1	The main purpose of this course is to equip the students with the nuances of the English language which includes proficiency in grammar and its effective usage in speaking and writing.	CO5	2	2	2	1	2	1	1	2	2	2	1	1	1	2	1
	CO2	It further helps them to prepare for various competitive exams and to keep up with the increasing demand for English in Indian society and at the global level.	Average	1.80	1.80	1.40	1.80	1.40	1.40	1.40	1.80	1.80	1.80	1.20	1.40	1.40	1.60	1.60
	CO3	It will also help in developing their overall confidence and personality.																
	CO4	will be able to present paper																
	CO5	will be able to present poster in a competition																

Class		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-409			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical in Molecular Biology and Microbial Biotechnology	CO1	1	2	2	1	1	1	3	1	2	1	1	2	1	1	3	
Semester No	IV	CO2	3	2	1	2	2	2	1	2	1	2	2	1	2	2	2	
Teacher Name	Rajashri Bhope and Asmita Gavhane	CO3	2	1	2	2	1	1	2	3	3	1	1	2	1	1	1	
Course Outcomes		CO4	2	2	1	2	1	2	2	1	1	3	3	1	2	1	2	
	CO1	Extraction of DNA from various sources	CO5	1	1	2	1	2	1	1	2	2	1	1	1	2	2	1
	CO2	Extraction of RNA from different sources	Average	1.80	1.60	1.60	1.60	1.40	1.40	1.80	1.80	1.80	1.60	1.60	1.40	1.60	1.40	1.80
	CO3	student will able to prepare reagent																
	CO4	student will able to study absorption spectra and quantitation of DNA, RNA and proteins																
	CO5	Student will able to separat proteins SDS-PAGE																

Class		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-410			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical in Animal and Plant Development	CO1	1	2	2	1	1	1	1	1	2	2	2	2	2	1	3	
Semester No	IV	CO2	1	3	1	2	3	2	1	2	1	1	1	1	1	2	1	
Teacher Name	Jyostna Galande and Prashant Katke	CO3	2	1	1	1	1	1	2	3	3	1	1	2	1	1	1	
Course Outcomes		CO4	2	2	1	2	2	2	2	1	1	3	3	1	1	1	2	
	CO1	Hands on training on different methods like dissection, sectioning and staining. Students well understood and depicted basic plant developmental diagrams	CO5	2	1	2	1	2	1	1	2	2	1	1	1	2	2	1
	CO2	Gained knowledge of RAM, SAM and florally induced meristem by learnings various staining techniques	Average	1.60	1.80	1.40	1.40	1.80	1.40	1.40	1.80	1.80	1.60	1.60	1.40	1.40	1.40	1.60

	CO3	Students will understand how to perform various practical on microsporogenesis and female development by employing suitable technique
	CO4	Students understood the basic concepts of embryogenesis and well able to differential in dicots and monocot plants at embryo development stage
	CO5	Hands on training how to do seed dissection and excision of embryo and endosperm.

Class		SY BSc Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-411			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical in Cell biology and Immunology		CO1	1	2	2	2	1	1	1	1	2	2	2	2	1	3	
Semester No	IV		CO2	1	3	1	2	3	2	1	2	1	1	1	1	2	1	
Teacher Name	Rajashri Bhope		CO3	2	1	1	1	1	1	2	3	3	1	1	2	1	1	
Course Outcomes			CO4	2	2	1	3	2	2	3	1	1	3	3	1	1	2	
	CO1	Differentiate between mitosis and meiosis	CO5	1	1	1	1	1	1	1	1	2	1	1	2	2	1	
	CO2	Studying the antigen antibody reaction	Average	1.40	1.80	1.20	1.80	1.60	1.40	1.60	1.60	1.80	1.60	1.60	1.60	1.40	1.60	
	CO3	Determining blood group																
	CO4	To make students develop an understanding about practical aspects of the components of the immune system as well as their function.																
	CO5	Basic as well as advanced methods will be taught to detect different antigen and antibody interactions,																

Academic Year : 2020-21

Class		T.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	Bb-331			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Microbial Biotechnology		CO1	2	2	1	1	1	1	2	1	2	1	1	2	1	1	2
Semester No	v		CO2	1	2	2	1	2	1	1	1	1	2	2	1	1	1	
Teacher Name	Asmita Gavhane		CO3	1	1	1	1	1	1	2	1	2	2	2	1	2	2	
Course Outcomes			CO4	1	2	2	1	2	2	1	2	1	1	2	2	2	1	
	CO1	After completion of this course: The students Be able to recognize a familiarity with the wide diversity of microbes, and their potential for use in various fields of human life.	CO5	1	1	2	1	2	2	1	1	2	1	1	2	1	2	1
	CO2	1. Be able to demonstrate a knowledge of microbial growth and growth kinetics and their classification based on environment	Average	1.20	1.60	1.60	1.00	1.60	1.40	1.40	1.20	1.60	1.20	1.40	1.80	1.20	1.60	1.40
	CO3	1. Be able to demonstrate familiarity with methods of immobilization techniques and their wide applications by using microbes and their enzymes																
	CO4	Be able to understand role of beneficial bacteria to human health as normal flora and harmful microbes as pathogens.																
	CO5	Be able to demonstrate an understanding of various infections their cause, transmission ,diagnosis, preventive measures and treatment																

Class		T.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	Bb-332			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Plant and animal tissue culture		CO1	2	1	1	1	1	1	1	2	1	1	2	1	2	2	
Semester No	V		CO2	2	2	2	2	2	2	1	1	1	2	2	2	3	2	
Teacher Name	Prashant Katke and Jyotsna Galande		CO3	1	1	1	1	1	1	2	1	2	1	2	1	2	1	
Course Outcomes			CO4	2	2	1	2	2	2	1	2	2	2	1	2	2	1	1

	CO1	support methodologies in plant tissue/cell culture to plant improvement,	CO5	2	1	1	1	1	1	1	1	2	1	1	2	1	2	1
	CO2	Be able to describe structure of animal genes and genomes and how genes are expressed and what regulatory mechanisms contribute to control of gene expression	Average	1.80	1.40	1.20	1.40	1.40	1.40	1.20	1.20	1.80	1.40	1.40	1.80	1.40	2.00	1.40
	CO3	Be able to describe what regulatory mechanisms contribute to control of gene expression																
	CO4	Be able to describe basic principles and techniques in genetic manipulation and genetic engineering.																
	CO5	Be able to describe basic principles and techniques in genetic engineering.																

Class	T.Y.B.Sc.Biotechnology		Course Outcomes	Program Outcomes												PSOs		
Subject Code	Bb-333			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Biodiversity & Systematics		CO1	1	2	1	1	2	1	2	1	1	2	1	2	2	2	1
Semester No	VI		CO2	2	1	2	1	2	2	1	1	1	1	2	2	1	1	1
Teacher Name	Prashant katke		CO3	1	1	2	2	1	1	2	1	2	2	1	1	2	2	2
Course Outcomes			CO4	2	2	1	1	2	2	1	2	2	2	1	2	1	1	2
	CO1	The students able to Evaluate the role of micro-organisms in specific biotechnological processes.	CO5	2	1	2	1	2	2	1	2	2	1	2	2	1	1	2
	CO2	To understand growth phase of microorganisms and effect of environment on growth.	Average	1.60	1.40	1.60	1.20	1.80	1.60	1.40	1.40	1.60	1.60	1.40	1.80	1.40	1.40	1.60
	CO3	Understand milk grading process and milk testing techniques.																
	CO4	Discover that life can be found almost everywhere on earth and explore the complexity of biodiversity																
	CO5	Examine the variety of life within the five kingdoms																

Class	T.Y.B.Sc.Biotechnology		Course Outcomes	Program Outcomes												PSOs		
Subject Code	Bb-334			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Bb-334 Practicals in Tissue culture		CO1	1	2	1	2	1	1	2	1	1	2	1	2	2	2	1

Semester No	V	CO2	2	1	2	1	2	2	1	1	1	1	2	2	1	1	2
Teacher Name	Jyotsna Galande	CO3	1	1	2	2	1	1	2	1	1	1	1	1	2	2	1
Course Outcomes		CO4	2	2	1	1	2	2	1	2	2	2	1	2	1	1	2
CO1	The students become familiar with equipment used in animal and plant tissue culture.	CO5	2	1	2	1	2	2	1	2	2	1	2	2	1	1	2
CO2	The students become familiar with aseptic techniques, stock preparation, media preparation used in animal and plant tissue culture	Average	1.60	1.40	1.60	1.40	1.60	1.60	1.40	1.40	1.40	1.40	1.40	1.80	1.40	1.40	1.60
CO3	The students will understand the safety procedures need for tissue culture.																
CO4	The student will learn different tissue culture techniques as callus and suspension culture																
CO5	The student will learn effect of different plant growth hormones																

Class	T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	Bb-335		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	A Practicals in Microbial biotechnology B Practicals in Field studies and report writing	CO1	1	2	1	1	1	1	2	1	1	2	1	2	2	2	1
Semester No	V	CO2	2	1	2	1	2	2	1	1	1	1	2	2	1	1	1
Teacher Name	Asmita Gavhane and Prashant Katke	CO3	1	1	2	2	1	1	2	1	2	1	1	1	2	2	1
Course Outcomes		CO4	1	2	1	1	2	2	1	2	2	2	1	2	1	1	2
CO1	To learn about growth cycle of bacteria and growth kinetics	CO5	2	1	2	1	2	2	1	2	2	1	2	2	1	1	2
CO2	To study effect of different environmental factors on bacterial growth	Average	1.40	1.40	1.60	1.20	1.60	1.60	1.40	1.40	1.60	1.40	1.40	1.80	1.40	1.40	1.40
CO3	To learn about food spoilage causing microorganisms																
CO4	To learn grading of milk and water testing for potability																
CO5	Field visit to local forest ecosystem to conduct calculation of species diversity, richness and abundance from the field visit, point count for insect diversity, and quadrat method for plant diversity study																

Class		T.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	Bb-341			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Large scale Manufacturing process		CO1	1	2	1	2	1	1	1	2	1	1	2	1	2	2	
Semester No	VI		CO2	2	1	2	2	2	2	1	2	1	1	2	2	1	1	
Teacher Name	Asmita Gavhane		CO3	1	2	1	1	1	1	2	1	2	1	2	1	2	2	
Course Outcomes			CO4	2	2	2	1	2	2	1	2	1	2	1	2	2	1	
	CO1	The students will be able to: Evaluate factors that contribute in enhancement of cell and product formation during fermentation process.	CO5	2	1	2	2	3	1	2	1	2	1	2	2	1	2	
	CO2	Analyze kinetics of cell and product formation in batch, continuous and fed-batch cultures	Average	1.60	1.60	1.60	1.60	1.80	1.40	1.40	1.40	1.60	1.20	1.60	1.80	1.20	1.60	
	CO3	Differentiate the rheological changes during fermentation process																
	CO4	Helps in the student's exposure on industrial applications of bioprocesses.																
	CO5	It also allows students to understand about upstream and downstream processing.																

Class		T.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	Bb-342			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Biochemical and Biophysical techniques		CO1	2	2	1	1	1	1	2	1	2	2	1	2	2	2	
Semester No	VI		CO2	1	2	2	1	2	2	1	1	1	1	2	2	1	1	
Teacher Name	Prashant Katke		CO3	2	1	2	2	1	1	2	2	2	1	2	1	2	2	
Course Outcomes			CO4	1	2	1	1	2	3	1	1	2	2	1	2	2	3	
	CO1	To develop practical research skills	CO5	2	1	2	1	1	2	1	2	2	1	1	2	1	2	
	CO2	To build analytical and presentation skills	Average	1.60	1.60	1.60	1.20	1.40	1.80	1.40	1.40	1.80	1.40	1.40	1.80	1.60	2.00	
	CO3	To be aware about advanced scientific methods																
	CO4	This significantly enhances the employability of the candidates in Biotechnological, Pharmaceutical Industries and Analytical Laboratories and research institutes																
	CO5	Understanding the applications of centrifugation and chromatography in biological investigations																

Class	T.Y.B.Sc.Biotechnology	Course	Program Outcomes												PSOs		
-------	------------------------	--------	------------------	--	--	--	--	--	--	--	--	--	--	--	------	--	--

Subject Code	Bb- 343	Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3		
Subject Name	Practicals in Recombinant DNA Technology	CO1	2	2	1	1	1	1	2	1	2	2	1	2	2	2	2		
Semester No	VI	CO2	1	2	2	1	2	2	1	1	1	1	2	2	1	1	1		
Teacher Name	Rajashri Bhope	CO3	2	1	1	2	1	1	2	2	2	1	1	1	2	2	2		
Course Outcomes		CO4	1	2	1	1	2	3	1	1	2	2	1	2	2	1	1		
	CO1	<p>To familiarize the student with emerging field of biotechnology i.e. Recombinant DNA Technology as well as to create understanding and expertise in wet lab techniques in genetic engineering</p> <p>After completion of this course, student will be able to</p> <p>Explain sufficient scientific understanding of the subject</p> <p>Have good knowledge of application of Recombinant DNA techniques in Life Sciences research that include transgenic technology, gene therapy, forensics and parental disputes. Use of molecular markers and their applications.</p> <p>gain knowledge on the construction of genomic and cDNA libraries & its applications</p> <p>They learn about plasmids, vectors and other vectors used for gene transfer.</p>	CO5	1	1	2	1	1	2	1	1	2	1	1	2	1	2	2	
	CO2		Average	1.40	1.60	1.40	1.20	1.40	1.80	1.40	1.20	1.80	1.40	1.20	1.80	1.60	1.60	1.60	
	CO3																		
	CO4																		
	CO5																		

Class	T.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs				
Subject Code	Bb -344	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3		
Subject Name	Techniques in Genetic Engineering	CO1	2	2	1	2	1	1	2	1	1	2	1	1	2	2	1		
Semester No	VI	CO2	2	1	2	1	2	2	1	2	1	1	2	2	1	1	3		
Teacher Name	Rajashri Bhope	CO3	1	1	2	2	1	1	2	1	2	1	1	1	2	2	1		
Course Outcomes		CO4	1	2	1	1	2	1	1	2	2	2	1	2	1	1	2		
	CO1	<p>This course teaches rDNA technology techniques and their application in the field of genetic engineering</p> <p>After completion of this course, student will be able to</p> <p>They learn about plasmids, vectors and gain knowledge on the construction of cDNA libraries</p> <p>knowledge on gene manipulation, gene expression, etc. which prepares them for further studies in the area of genetic engineering</p>	CO5	2	1	2	1	2	2	1	2	2	1	2	2	1	1	2	
	CO2		Average	1.60	1.40	1.60	1.40	1.60	1.40	1.40	1.60	1.60	1.40	1.40	1.60	1.40	1.40	1.80	
	CO3																		
	CO4																		

CO5	To learn gene transfer process and restriction mapping
-----	--

Class		T.Y.B.Sc.Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	Bb -345			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	A Practicals of large scale manufacturing process B Practicals in biochemical and Biophysical techniques		CO1	1	2	1	2	1	1	2	1	1	2	3	2	2	2	1
Semester No	VI		CO2	2	1	2	1	2	2	1	2	1	1	2	2	1	1	1
Teacher Name	Asmita Gavhane and Komal Sonawane		CO3	1	1	2	2	1	1	2	1	2	1	1	1	2	2	1
Course Outcomes			CO4	2	2	1	1	2	2	1	2	2	2	1	2	1	2	2
	CO1	To understand design of bioreactors and control necessary for maximizing production.	CO5	2	1	2	1	2	2	1	2	2	1	2	2	2	1	2
	CO2	Select and optimize media for maximum production of microbial metabolites	Average	1.60	1.40	1.60	1.40	1.60	1.60	1.40	1.60	1.60	1.40	1.80	1.80	1.60	1.60	1.40
	CO3	Designing of protocols for strain improvement and separation of molecules after fermentation process.																
	CO4	To be aware about advanced scientific methods																
	CO5	This significantly enhances the employability of the candidates in Biotechnological, Pharmaceutical Industries and Analytical Laboratories and research institutes																

CO-PO Mapping

		Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
FY	FY	1	BBt 101	1.40	1.40	1.80	1.40	1.60	1.40	1.40	1.20	2.00	1.40	1.40	1.80
		2	BBt 102	1.40	1.20	1.40	1.00	1.40	1.20	1.20	1.20	1.60	1.20	1.40	1.80
		3	BBt 103	1.80	1.40	1.60	1.40	1.60	1.60	1.40	1.20	1.80	1.20	1.40	1.80
		4	BBt 104	1.40	1.40	1.40	1.20	1.60	1.60	1.40	1.20	1.80	1.40	1.40	1.80
		5	BBt 105	1.40	5.20	1.20	1.00	1.20	1.20	1.40	1.20	1.80	1.40	1.40	1.80
		6	BBt 106	2.00	1.60	2.00	1.40	1.60	1.40	1.40	1.20	1.80	1.20	1.60	1.80
		7	BBt 107	2.00	1.80	2.00	1.80	1.60	1.80	1.40	1.20	1.80	1.40	1.60	1.80
		8	BBt 108	2.00	1.60	2.00	1.80	1.60	1.80	1.40	1.20	1.80	1.40	1.60	1.80
		9	BBt 109	1.20	1.20	1.20	1.40	1.40	1.80	1.40	1.40	1.80	1.40	1.60	1.60
		10	BBt 110	1.40	1.20	1.60	1.40	1.60	1.80	1.20	1.40	1.40	1.40	1.60	1.60
		11	BBt 111	1.60	1.20	1.40	1.40	1.40	1.60	1.40	1.40	1.80	1.40	1.20	1.40
		12	BBt 112	1.20	1.40	1.40	1.40	1.40	1.40	1.40	1.20	1.60	1.40	1.40	1.40
		13	BBt 201	2.00	1.80	2.00	1.80	1.60	1.80	1.40	1.40	1.80	1.40	1.60	1.80
		14	BBt 202	2.00	2.00	2.00	1.80	1.60	1.80	1.40	1.40	1.80	1.40	1.60	1.80
SY	SY	1	BBt- 301	1.40	1.40	1.40	1.00	1.40	1.20	1.20	1.20	1.60	1.20	1.40	1.80
		2	BBt-302	1.20	1.60	1.60	1.20	1.80	1.40	1.80	1.40	1.40	1.60	1.60	1.80
		3	BBt-303	1.40	1.60	1.80	1.20	1.80	1.40	1.40	1.60	1.60	1.60	1.60	1.80
		4	BBt-304	1.80	1.40	1.60	1.20	1.60	1.40	1.60	2.00	1.40	1.40	1.40	1.40
		5	BBt-305	1.20	1.40	1.60	1.00	1.60	1.40	1.40	1.20	1.60	1.00	1.40	1.80
		6	BBt- 306	1.80	1.60	1.80	1.20	1.60	1.60	1.60	1.60	1.40	1.40	1.60	1.40
		7	BBt-307	1.80	1.40	1.40	1.40	1.80	1.60	1.40	1.60	1.40	1.40	1.60	1.40
		8	BBt-308	1.20	1.40	1.60	1.00	1.60	1.40	1.40	1.20	1.60	1.00	1.40	1.80
		9	BBt-309	1.40	1.80	1.60	1.60	1.80	1.60	1.40	1.20	1.60	1.60	1.40	1.80
		10	BBt-310	1.80	1.80	1.60	1.60	1.80	1.60	1.40	1.40	1.60	1.60	1.20	1.60
		11	BBt-311	1.40	1.80	1.60	1.60	1.80	1.80	1.40	1.40	1.60	1.80	1.20	1.80
		12	BBt-401	1.20	1.40	1.60	1.00	1.60	1.40	1.40	1.20	1.60	1.00	1.40	1.80
		13	BBt-402	1.20	1.40	1.60	1.00	1.60	1.40	1.40	1.20	1.60	1.00	1.40	1.80
		14	BBt-403	1.20	1.40	1.60	1.00	1.60	1.40	1.40	1.20	1.60	1.00	1.40	1.80
TY	TY	1	Bb-331	1.20	1.60	1.60	1.00	1.60	1.40	1.40	1.20	1.60	1.20	1.40	1.80
		2	Bb-332	1.80	1.40	1.20	1.40	1.40	1.40	1.20	1.20	1.80	1.40	1.40	1.80
		3	Bb-333	1.60	1.40	1.60	1.20	1.80	1.60	1.40	1.40	1.60	1.60	1.40	1.80
		4	Bb-334	1.60	1.40	1.60	1.40	1.60	1.60	1.40	1.40	1.40	1.40	1.40	1.80
		5	Bb-335	1.40	1.40	1.60	1.20	1.60	1.60	1.40	1.40	1.60	1.40	1.40	1.80
		6	Bb-341	1.60	1.60	1.60	1.60	1.80	1.40	1.40	1.40	1.60	1.20	1.60	1.80
		7	Bb-342	1.60	1.60	1.60	1.20	1.40	1.80	1.40	1.40	1.80	1.40	1.40	1.80
		8	Bb- 343	1.40	1.60	1.40	1.20	1.40	1.80	1.40	1.20	1.80	1.40	1.20	1.80
		9	Bb -344	1.60	1.40	1.60	1.40	1.60	1.40	1.40	1.60	1.60	1.40	1.40	1.60
		10	Bb -345	1.60	1.40	1.60	1.40	1.60	1.60	1.40	1.60	1.60	1.40	1.80	1.80

CO-PO ATTAINMENT

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
0.728	0.728	0.936	0.728	0.832	0.728	0.728	0.624	1.04	0.728	0.728	0.936
1.4	1.2	1.4	1	1.4	1.2	1.2	1.2	1.6	1.2	1.4	1.8
1.8	1.4	1.6	1.4	1.6	1.6	1.4	1.2	1.8	1.2	1.4	1.8
1.4	1.4	1.4	1.2	1.6	1.6	1.4	1.2	1.8	1.4	1.4	1.8
1.4	5.2	1.2	1	1.2	1.2	1.4	1.2	1.8	1.4	1.4	1.8
2	1.6	2	1.4	1.6	1.4	1.4	1.2	1.8	1.2	1.6	1.8
2	1.8	2	1.8	1.6	1.8	1.4	1.2	1.8	1.4	1.6	1.8
1.36	1.088	1.36	1.224	1.088	1.224	0.952	0.816	1.224	0.952	1.088	1.224
1.008	1.008	1.008	1.176	1.176	1.512	1.176	1.176	1.512	1.176	1.344	1.344
1.4	1.2	1.6	1.4	1.6	1.8	1.2	1.4	1.4	1.4	1.6	1.6
1.6	1.2	1.4	1.4	1.4	1.6	1.4	1.4	1.8	1.4	1.2	1.4
1.2	1.4	1.4	1.4	1.4	1.4	1.4	1.2	1.6	1.4	1.4	1.4
2	1.8	2	1.8	1.6	1.8	1.4	1.4	1.8	1.4	1.6	1.8
2	2	2	1.8	1.6	1.8	1.4	1.4	1.8	1.4	1.6	1.8
1.4	1.4	1.4	1	1.4	1.2	1.2	1.2	1.6	1.2	1.4	1.8
1.2	1.6	1.6	1.2	1.8	1.4	1.8	1.4	1.4	1.6	1.6	1.8
1.4	1.6	1.8	1.2	1.8	1.4	1.4	1.6	1.6	1.6	1.6	1.8
1.224	0.952	1.088	0.816	1.088	0.952	1.088	1.36	0.952	0.952	0.952	0.952
0.624	0.728	0.832	0.52	0.832	0.728	0.728	0.624	0.832	0.52	0.728	0.936
1.8	1.6	1.8	1.2	1.6	1.6	1.6	1.6	1.4	1.4	1.6	1.4
1.8	1.4	1.4	1.4	1.8	1.6	1.4	1.6	1.4	1.4	1.6	1.4
1.2	1.4	1.6	1	1.6	1.4	1.4	1.2	1.6	1	1.4	1.8
1.4	1.8	1.6	1.6	1.8	1.6	1.4	1.2	1.6	1.6	1.4	1.8
1.8	1.8	1.6	1.6	1.8	1.6	1.4	1.4	1.6	1.6	1.2	1.6
1.4	1.8	1.6	1.6	1.8	1.8	1.4	1.4	1.6	1.8	1.2	1.8
1.2	1.4	1.6	1	1.6	1.4	1.4	1.2	1.6	1	1.4	1.8
1.2	1.4	1.6	1	1.6	1.4	1.4	1.2	1.6	1	1.4	1.8
1.2	1.4	1.6	1	1.6	1.4	1.4	1.2	1.6	1	1.4	1.8
1.2	1.6	1.6	1	1.6	1.4	1.4	1.2	1.6	1.2	1.4	1.8
1.8	1.4	1.2	1.4	1.4	1.4	1.2	1.2	1.8	1.4	1.4	1.8
1.6	1.4	1.6	1.2	1.8	1.6	1.4	1.4	1.6	1.6	1.4	1.8
1.6	1.4	1.6	1.4	1.6	1.6	1.4	1.4	1.4	1.4	1.4	1.8
1.4	1.4	1.6	1.2	1.6	1.6	1.4	1.4	1.6	1.4	1.4	1.8
1.6	1.6	1.6	1.6	1.8	1.4	1.4	1.4	1.6	1.2	1.6	1.8
1.6	1.6	1.6	1.2	1.4	1.8	1.4	1.4	1.8	1.4	1.4	1.8
1.4	1.6	1.4	1.2	1.4	1.8	1.4	1.2	1.8	1.4	1.2	1.8
1.6	1.4	1.6	1.4	1.6	1.4	1.4	1.6	1.6	1.4	1.4	1.6
1.6	1.4	1.6	1.4	1.6	1.6	1.4	1.6	1.6	1.4	1.8	1.8

CO-PSO MAPPING

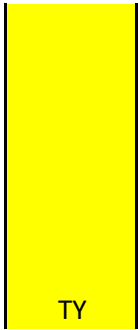
	Course	PSO1	PSO2	PSO3
1	BBt 101	1.20	1.60	1.40
2	BBt 102	1.20	1.60	1.40
3	BBt 103	1.20	1.60	1.80
4	BBt 104	1.40	1.60	1.40
5	BBt 105	1.40	1.60	1.60
6	BBt 106	1.20	1.80	1.60
7	BBt 107	1.20	2.20	1.60
8	BBt 108	1.20	2.20	1.60
9	BBt 109	1.40	1.60	1.40
10	BBt 110	1.80	1.60	1.40
11	BBt 111	1.40	1.60	1.60
12	BBt 112	1.40	1.80	1.60
13	BBt 201	1.20	2.20	1.60
14	BBt 202	1.20	2.20	1.80
1	BBt- 301	1.40	1.60	1.40
2	BBt-302	1.40	1.60	1.60
3	BBt-303	1.40	1.60	1.80
4	BBt-304	1.40	1.60	1.60
5	BBt-305	1.20	1.60	1.40
6	BBt- 306	1.80	1.20	1.40
7	BBt-307	1.60	1.40	1.60
8	BBt-308	1.20	1.60	1.40
9	BBt-309	1.40	1.80	1.80
10	BBt-310	1.40	1.60	1.80
11	BBt-311	1.40	1.60	2.00
12	BBt-401	1.20	1.60	1.40
13	BBt-402	1.20	1.60	1.40
14	BBt-403	1.20	1.60	1.40
1	Bb-331	1.20	1.60	1.40
2	Bb-332	1.40	2.00	1.40

CO-PSO ATTAINMENT

Course	PSO1	PSO2	PSO3
BBt 101	0.624	0.832	0.728
BBt 102	1.2	1.6	1.4
BBt 103	1.2	1.6	1.8
BBt 104	1.4	1.6	1.4
BBt 105	1.4	1.6	1.6
BBt 106	1.2	1.8	1.6
BBt 107	1.2	2.2	1.6
BBt 108	0.816	1.496	1.088
BBt 109	1.176	1.344	1.176
BBt 110	1.8	1.6	1.4
BBt 111	1.4	1.6	1.6
BBt 112	1.4	1.8	1.6
BBt 201	1.2	2.2	1.6
BBt 202	1.2	2.2	1.8
BBt- 301	1.4	1.6	1.4
BBt-302	1.4	1.6	1.6
BBt-303	1.4	1.6	1.8
BBt-304	0.952	1.088	1.088
BBt-305	0.624	0.832	0.728
BBt- 306	1.8	1.2	1.4
BBt-307	1.6	1.4	1.6
BBt-308	1.2	1.6	1.4
BBt-309	1.4	1.8	1.8
BBt-310	1.4	1.6	1.8
BBt-311	1.4	1.6	2
BBt-401	1.2	1.6	1.4
BBt-402	1.2	1.6	1.4
BBt-403	1.2	1.6	1.4
Bb-331	1.2	1.6	1.4
Bb-332	1.4	2	1.4

FY

SY



3	Bb-333	1.40	1.40	1.60
4	Bb-334	1.40	1.40	1.60
5	Bb-335	1.40	1.40	1.40
6	Bb-341	1.20	1.60	1.40
7	Bb-342	1.60	2.00	1.40
8	Bb-343	1.60	1.60	1.60
9	Bb-344	1.40	1.40	1.80
10	Bb-345	1.60	1.60	1.40

Bb-333	1.4	1.4	1.6
Bb-334	1.4	1.4	1.6
Bb-335	1.4	1.4	1.4
Bb-341	1.2	1.6	1.4
Bb-342	1.6	2	1.4
Bb-343	1.6	1.6	1.6
Bb-344	1.4	1.4	1.8
Bb-345	1.6	1.6	1.4

Percentage CO-PSO ATTAINMENT

Course	PSO1	PSO2	PSO3
BBt 101	52	52	52
BBt 102	100	100	100
BBt 103	100	100	100
BBt 104	100	100	100
BBt 105	100	100	100
BBt 106	100	100	100
BBt 107	100	100	100
BBt 108	68	68	68
BBt 109	84	84	84
BBt 110	100	100	100
BBt 111	100	100	100
BBt 112	100	100	100
BBt 201	100	100	100
BBt 202	100	100	100
BBt- 301	100	100	100
BBt-302	100	100	100
BBt-303	100	100	100
BBt-304	68	68	68
BBt-305	52	52	52
BBt- 306	100	100	100
BBt-307	100	100	100
BBt-308	100	100	100
BBt-309	100	100	100
BBt-310	100	100	100
BBt-311	100	100	100
BBt-401	100	100	100
BBt-402	100	100	100
BBt-403	100	100	100
Bb-331	100	100	100

Bb-332	100	100	100
Bb-333	100	100	100
Bb-334	100	100	100
Bb-335	100	100	100
Bb-341	100	100	100
Bb-342	100	100	100
Bb- 343	100	100	100
Bb -344	100	100	100
Bb -345	100	100	100