

<b>Academic Year</b>	<b>2021-22</b>
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**B.P.H.E. Society's  
Ahmednagar College, Ahmednagar  
Internal Quality Assurance Cell  
CO, PO, and PSO Attainment Sheet**

<b>Department Name</b>	<b>Deapartment of Biotechnology</b>
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<b>Program Name</b>	<b>B.Sc.</b>
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<b>Program Outcomes(PO)</b>
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<b>PO1</b>	To introduce the concepts in various allied subjects
<b>PO2</b>	To enrich students' knowledge
<b>PO3</b>	To help the students to build interdisciplinary approach
<b>PO4</b>	To inculcate sense of scientific responsibilities and social and environment
<b>PO5</b>	To help students build-up a progressive and successful career
<b>PO6</b>	The coursework is designed to train the students to work independently and also to adapt
<b>PO7</b>	The students will be able to develop skills, attitude and values required for self-directed,
<b>PO8</b>	The student will be able to adopt code of ethics in professional and social context. Also able
<b>PO9</b>	the student will able to comprehend the complex interconnections between the
<b>PO10</b>	The students can find employment opportunities in pharma industries, healthcare, food
<b>PO11</b>	The student will utilize critical inquiry to analyze, design and conduct experiments to solve
<b>PO12</b>	The student will be able to execute their professional roles as biotechnology professionals,

<b>Program Specific Outcome(PSO)</b>
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<b>PSO1</b>	The interdisciplinary nature of biotechnology helps student to understand living
<b>PSO2</b>	Application of these studies on living organisms and their bioprocesses are learnt by
<b>PSO3</b>	Biotechnologists are always in demand as an efficient work force in fundamental

<b>Academic Year :</b>	<b>2021-22</b>
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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	1	2	3	1	2	2	2	1	2	2	3	2	3	2
Semester No	I		CO2	2	1	2	2	3	2	3	1	2	2	1	1	2	1	3
Teacher Name	Komal Sonawane		CO3	1	2	2	2	1	1	1	2	3	1	2	2	2	1	3
Course Outcomes			CO4	1	1	2	3	1	2	2	3	1	2	2	1	1	2	1
	CO1	To understand rate laws, rate equations of different types of reactions, determine rate constant values, order of reactions, effect of temperature and other factors on reaction rate, homogenous catalysis, catalytic effect on reaction rate, equations related to chemical catalysis	CO5															
				2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
	CO2	To learn the basic concepts of Stereochemistry	Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	1.80	2.00	2.20
	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	2	2	2	1	2	2	3	1	2	2	2	3	2	2

Semester No	I	CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	3
Teacher Name	Iram Shaikh	CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	3
Course Outcomes		CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	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	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.00	2.20
	CO3	Use basic experimental apparatus common to the study of physical phenomena															
	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	2	3	1	2	2	2	1	1	2	3	2	3	2	
Semester No	I	CO2	2	2	1	1	3	2	3	1	2	1	2	2	3	1	2	
Teacher Name	Komal Sonawane	CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	2	
Course Outcomes		CO4	1	2	2	1	1	2	2	3	1	1	2	3	1	2	3	
	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	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.20	2.00	2.20
	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.
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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	1	2	3	1	2	2	2	1	2	2	3	2	2	3
Semester No	I		CO2	2	1	2	2	3	2	3	1	2	2	1	1	2	3	1
Teacher Name	Anuja Bhalerao		CO3	1	2	2	2	1	1	1	2	3	1	2	2	2	3	1
Course Outcomes			CO4	1	1	2	3	1	2	2	3	1	2	2	1	3	1	2
	CO1	Biophysics should be apply the principles of physical sciences to understand and solve biological complexities.	CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	2	3
	CO2	Using the knowledge gained during the course, students should be able to address the academic and industrial research problems	Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	2.20	2.20	2.00
	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	2	2	2	1	2	2	3	1	2	2	2	3	2	2
Semester No	I	CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	3
Teacher Name	Prashant Katke	CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	3
Course Outcomes		CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	1
CO1	The interdisciplinary nature of biotechnology integrates living systems including animals and their studies.	CO5	1	1	2	3	1	2	2	3	1	2	2	1	3	2	2
CO2	Be able to understand knowledge in basic and applied aspects of animal sciences.	Average	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.00	2.20	2.20
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	1	2	2	3	1	2	2	2	1	1	2	3	2	2	3
Semester No	I	CO2	2	2	1	1	3	2	3	1	2	1	2	2	2	3	1
Teacher Name	Jyotsna Galande	CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	
Course Outcomes		CO4	1	2	2	1	1	2	2	3	1	1	2	3	3	1	2
CO1	Be able to formulate original questions about plants into empirically testable hypotheses.	CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	2	3
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	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.20	2.20	2.00
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	1	1	2	3	1	2	2	2	1	2	2	3	2	3	2
Semester No	I		CO2	2	1	2	2	3	2	3	1	2	2	1	1	3	1	2
Teacher Name	Asmita Gavhane		CO3	1	2	2	2	1	1	1	2	3	1	2	2	3	1	2
Course Outcomes			CO4	1	1	2	3	1	2	2	3	1	2	2	1	1	2	3
CO1	The student will be able to understand history of use of microorganisms in nature and human life		CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
CO2	The students will learn about types of microorganisms and their significance. The students will know about similarities and differences about microorganisms		Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	2.20	2.00	2.20
CO3	Be able to understand what is Microbiology and various branches and scope of subject																	
CO4	The students will be familiar with concept of prokaryotes and eukaryotes and classification of 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	1	2	2	2	1	2	2	3	1	2	2	2	3	2	3
Semester No	I		CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	1
Teacher Name	Farhin Khan		CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	1
Course Outcomes			CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	2

CO1	Be able to communicate mathematical and logical ideas in writing.	CO5	1	1	2	3	1	2	2	3	1	2	2	1	3	2	3
CO2	Be able to apply problem solving and logical skills.	Average	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.00	2.20	2.00
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.																

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 and Biochemistry		CO1	1	1	2	3	1	2	2	2	1	2	2	3	2	3	2
Semester No	I		CO2	2	1	2	2	3	2	3	1	2	2	1	1	2	1	3
Teacher Name	Komal Sonawane		CO3	1	2	2	2	1	1	1	2	3	1	2	2	2	1	3
Course Outcomes			CO4	1	1	2	3	1	2	2	3	1	2	2	1	1	2	1
CO1	The students will learn practical or laboratory experience or		CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
CO2	The student will learn to test water hardness , PH meter, colorimetry and applications		Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	1.80	2.00	2.20
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-110			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical In Plant and Animal science		CO1	1	2	2	2	1	2	2	3	1	2	2	2	3	2	2
Semester No	I		CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	3
Teacher Name	Prashant Katke , Jyotsna Galande		CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	3
Course Outcomes			CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	1

CO1	To study about algae, fungi, bryophytes, pteridophytes , gymnosperms	CO5	1	1	2	3	1	2	2	3	1	2	2	1	3	2	2
CO2	To study on morphological parameters of angiosperms and anatomy of dicot and monocots	Average	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.00	2.20	2.20
CO3	The students will learn about Parmecium and culturing techniques																
CO4	The students will learn about Hydra and culturing techniques																
CO5	The students will learn about Drosophila and culturing techniques																

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	1	2	2	3	1	2	2	2	1	1	2	3	2	3	2
Semester No		I	CO2	2	2	1	1	3	2	3	1	2	1	2	2	3	1	2
Teacher Name		Asmita Gavane	CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	2
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	1	2	3
CO1		the student will understand basic laborator rules and practices in microbiology.	CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
CO2		The students will learn use of glasswares, instruments and their application commonly use in microbiology laboratory	Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.20	2.00	2.20
CO3		To learn practical skill for observation of miroorganisms by suning various staining method and																
CO4		The students wii lknow 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	Program Outcomes												PSOs		
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Subject Code	BBt-112		Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical In Physics and Biophysics		CO1	1	2	2	2	1	2	2	3	1	2	2	2	3	2	2
Semester No	I		CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	3
Teacher Name	Iram Shaikh , Anuja Bhalerao		CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	3
Course Outcomes			CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	1
	CO1	To gain practical knowledge by applying the experimental methods to correlate with the Physics theory.	CO5															
	CO2	To learn the usage of electrical and optical systems for various measurements.	Average	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.00	2.20	2.20
	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	1	2	2	3	1	2	2	2	1	1	2	3	2	2	3
Semester No	II		CO2	2	2	1	1	3	2	3	1	2	1	2	2	2	3	1
Teacher Name	Komal Sonawane		CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	3	1	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															
	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	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.20	2.20	2.00

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	1	1	2	3	1	2	2	2	1	2	2	3	3	2	2
Semester No	II		CO2	2	1	2	2	3	2	3	1	2	2	1	1	1	2	3
Teacher Name	Komal Sonawane		CO3	1	2	2	2	1	1	1	2	3	1	2	2	1	2	3
Course Outcomes			CO4	1	1	2	3	1	2	2	3	1	2	2	1	2	3	1
CO1	student will be able to understand:nature of biochemistry		CO5	2	3	1	2	2	1	1	1	2	3	1	2	3	2	2
CO2	physical and chemical properties of molecules as a linkage of biochemistry		Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	2.00	2.20	2.20
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. R																	

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	1	2	2	2	1	2	2	3	1	2	2	2	2	3	2
Semester No	II		CO2	3	2	3	1	2	2	1	1	3	2	3	1	3	1	2

Teacher Name	Anuja Bhalerao		CO3	1	1	1	2	3	1	2	2	1	1	1	2	3	1	2
Course Outcomes			CO4	1	2	2	3	1	2	2	1	1	2	2	3	1	2	3
	CO1	To learn Design and understand biomedical instruments that comply with the regulatory standards for medical devices.	CO5															
				1	1	2	3	1	2	2	3	1	2	2	1	2	3	2
	CO2	Describe the key considerations for biological signal generation and measurements.	Average	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.20	2.00	2.20
	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	1	2	2	3	1	2	2	2	1	1	2	3	3	2	2
Semester No	II		CO2	2	2	1	1	3	2	3	1	2	1	2	2	1	2	3
Teacher Name	Prashant Katke		CO3	3	1	2	2	1	1	1	2	1	2	2	2	1	2	3
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	2	3	1
	CO1	students learn integrated principles of nutrition and physiology define issues, enable reasoning, and devise solutions for progress in animal health and production	CO5															
				2	3	1	2	2	1	1	1	2	3	1	2	3	2	2
	CO2	Demonstrate hands-on skills for optimal care and management of farm and companion animals	Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.00	2.20	2.20
	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
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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	1	1	2	3	1	2	2	2	1	2	2	3	2	3	2
Semester No	II		CO2	2	1	2	2	3	2	3	1	2	2	1	1	3	1	2
Teacher Name	Jyotsna Galande		CO3	1	2	2	2	1	1	1	2	3	1	2	2	3	1	2
Course Outcomes			CO4	1	1	2	3	1	2	2	3	1	2	2	1	1	2	3
CO1	To understand the plants and plant cells in relation to water		CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
CO2	Understand the process of photosynthesis in higher plants with particular emphasis on light and dark reactions, C3 and C4 pathways		Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	2.20	2.00	2.20
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	1	2	2	2	1	2	2	3	1	2	2	2	3	2	2
Semester No	II		CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	3
Teacher Name	Asmita Gavhane		CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	3
Course Outcomes			CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	1
CO1	The students will learn about design of media for bacteria and fungi		CO5	1	1	2	3	1	2	2	3	1	2	2	1	3	2	2
CO2	will have knowledge about nutritional classification of bacteria		Average	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.00	2.20	2.20

	CO3	will learn about Growth and reproduction of microorganisms
	CO4	will have knowledge of different sterilization methods and e
	CO5	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 Biostatistics-II		CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	3	2
Semester No	II		CO2	2	2	1	1	3	2	3	1	2	1	2	2	3	1	2
Teacher Name	Farhin Khan		CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	2
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	1	2	3
	CO1	Be able to communicate mathematical and logical ideas in writing.	CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
	CO2	Be able to apply problem solving and logical skills.	Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.20	2.00	2.20
	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	Computer in biology		CO1	1	1	2	3	1	2	2	2	1	2	2	3	3	2	2
Semester No	II		CO2	2	1	2	2	3	2	3	1	2	2	1	1	1	2	3
Teacher Name	Farhin Khan		CO3	1	2	2	2	1	1	1	2	3	1	2	2	1	2	3
Course Outcomes			CO4	1	1	2	3	1	2	2	3	1	2	2	1	2	3	1

CO1	Develop ability to analyze a problem, identify and define the computing requirements, which may be appropriate to its solution.	CO5	2	3	1	2	2	1	1	1	2	3	1	2	3	2	2
CO2	To prepare students to undertake careers involving problem solving using computer science and technologies.	Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	2.00	2.20	2.20
CO3	Develop ability to pursue advanced studies and research in computer science.																
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 & Biochemistry II		CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	2	3
Semester No	II		CO2	2	2	1	1	3	2	3	1	2	1	2	2	2	3	1
Teacher Name	Komal Sonawane		CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	3	1	2
	CO1	The student will learn about Viscometer and use.	CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	2	3
	CO2	The students will learn titration method for estimation of acids	Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.20	2.20	2.00
	CO3	They will understand stereochemistry.																
	CO4	To learn techniques of estimation of biomolecules and enzyme activity.																
	CO5	To learn thin layer chromatography and application																

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	1	2	3	1	2	2	2	1	2	2	3	3	2	2
Semester No	II		CO2	2	1	2	2	3	2	3	1	2	2	1	1	1	2	3
Teacher Name	Prashant Katke , Jyotsna Galande		CO3	1	2	2	2	1	1	1	2	3	1	2	2	1	2	3

Course Outcomes			CO4	1	1	2	3	1	2	2	3	1	2	2	1	2	3	1
CO1	To study the process of osmosis, turgor pressure and diffusion pressure	CO5	2	3	1	2	2	1	1	1	2	3	1	2	3	2	2	2
CO2	To determine of rate of respiration	Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	2.00	2.20	2.20	2.20
CO3	To study about economically important plants																	
CO4	To study of <i>Plasmodium sps</i> , <i>Fasciola sp.Honey Bee</i> .																	
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	2	2	2	1	2	2	3	1	2	2	2	3	2	2
Semester No	II		CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	3
Teacher Name	Asmita Gavane		CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	3
Course Outcomes			CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	1
CO1	The students will learn about preparation of Bacterial and fungal growth media		CO5	1	1	2	3	1	2	2	3	1	2	2	1	3	2	2
CO2	The students will learn Aseptic transfer techniques		Average	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.00	2.20	2.20
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	1	2	3	1	2	2	2	1	2	2	3	3	2	2
Semester No	II		CO2	2	1	2	2	3	2	3	1	2	2	1	1	1	2	3
Teacher Name	Farhin Khan		CO3	1	2	2	2	1	1	1	2	3	1	2	2	1	2	3
Course Outcomes			CO4	1	1	2	3	1	2	2	3	1	2	2	1	2	3	1

	CO1	The Information Technology prepares a student for basic knowledge using computer to solve data processing problems in life.	CO5	2	3	1	2	2	1	1	1	2	3	1	2	3	2	2
	CO2	Demonstrate a knowledge and understanding of using computers to solve problems related to practical applications.	Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	2.00	2.20	2.20
	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																



<b>Academic Year :</b>	<b>2021-22</b>
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Class		S.Y.B.Sc. Biotechnology	Course Outcome	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	2	2	3	1	2	2	2	1	1	2	3	2	3	2
Semester No	III		CO2	2	2	1	1	3	2	3	1	2	1	2	2	3	1	2
Teacher Name	Rajashri Bhope		CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	2
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	1	2	3
	CO1	This course introduces the students to the basics of cell and its components.	CO5															
	CO2	This gives them a strong foundation on the basic unit of life	Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.20	2.00	2.20
	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		S.Y.B.Sc. Biotechnology	Course Outcome	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	2	1	2	2	3	1	2	2	2	3	2	2
Semester No	III		CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	3
Teacher Name	Rajashri Bhope		CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	3
Course Outcomes			CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	1
	CO1	To understand the structure of DNA through Watson & Crick model	CO5	1	1	2	3	1	2	2	3	1	2	2	1	3	2	2

	CO2	The course teaches the students about genes, and genome organization and comparison of these in different organisms	Average	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.00	2.20	2.20
	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		S.Y.B.Sc. Biotechnology	Course Outcome	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	1	2	3	1	2	2	2	1	2	2	3	2	3	2
Semester No	III		CO2	2	1	2	2	3	2	3	1	2	2	1	1	2	1	3
Teacher Name	Komal Sonawane		CO3	1	2	2	2	1	1	1	2	3	1	2	2	2	1	3
Course Outcomes			CO4	1	1	2	3	1	2	2	3	1	2	2	1	1	2	1
	CO1	Students will be taught Mendelian genetics, their principles and gene interaction.	CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
	CO2	They learn about chromosomal aberrations and structure of chromosomes	Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	1.80	2.00	2.20
	CO3	The student will gain a basic understanding on human genetics and hereditary.																
	CO4	The student will gain a basic understanding on human genetics and hereditary																
	CO5	To learn the concepts of Linkage.																

Class		S.Y.B.Sc. Biotechnology	Course Outcome	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	1	2	2	3	1	2	2	2	1	1	2	3	2	3	2
Semester No	III		CO2	2	2	1	1	3	2	3	1	2	1	2	2	3	1	2
Teacher Name	Komal Sonawane		CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	2
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	1	2	3

	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	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
	CO2	The student will be able to learn Lipid biosynthesis, acids and cholesterol, ketone bodies, acidosis, ketosis Degradation of fatty	Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.20	2.00	2.20
	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	S.Y.B.Sc. Biotechnology	Course Outcome	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	1	2	2	2	1	2	2	3	1	2	2	2	3	2	2	
Semester No	III	CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	3	
Teacher Name	Jyotsna Galande	CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	3	
Course Outcomes		CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	1	
	CO1	Students after learning this course able to	CO5	1	1	2	3	1	2	2	3	1	2	2	1	3	2	2

	CO2	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	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.00	2.20	2.20
	CO3	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	Describe suitable methods for characterizing the activity, function, diversity, and composition of microbial communities																
	CO5	Explain the microbial processes and growth requirements underlying the activated sludge process, nitrification, denitrification, enhanced phosphorus removal, and anaerobic digestion																

Class	S.Y.B.Sc. Biotechnology	Course Outcome	Program Outcomes												PSOs			
Subject Code	BBt-306		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Bio analytical Techniques	CO1	1	1	2	3	1	2	2	2	1	2	2	3	2	3	2	
Semester No	III	CO2	2	1	2	2	3	2	3	1	2	2	1	1	2	1	3	
Teacher Name	Komal Sonawane	CO3	1	2	2	2	1	1	1	2	3	1	2	2	2	1	3	
Course Outcomes		CO4	1	1	2	3	1	2	2	3	1	2	2	1	1	2	1	
	CO1	Students will be able to diagnose a specific biochemical genetic disorder	CO5															
	CO2	Students will be able to develop technical aspects of analyses for a diagnostic biochemical laboratory	Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	1.80	2.00	2.20

	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		S.Y.B.Sc. Biotechnology	Course Outcome	Program Outcomes												PSOs		
Subject Code	BBt-307			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	AECC-I (Environment)	CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	3	2	
Semester No	III	CO2	2	2	1	1	3	2	3	1	2	1	2	2	3	1	2	
Teacher Name	Anuja Bhalerao	CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	2	
Course Outcomes		CO4																
	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	2.00	1.67	1.67	2.00	1.67	1.67	2.00	1.67	1.33	1.33	2.00	2.33	2.67	1.67	2.00
	CO3	Gaining knowledge to assess the conditions and trends of biodiversity either globally or sub globally and to understand it's necessity to measure the abundance of all organisms over space and time.																
	CO4																	
	CO5																	

Class		S.Y.B.Sc. Biotechnology	Course Outcome	Program Outcomes												PSOs		
Subject Code	BBt-308			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	AECC-II (Language Communication)		CO1	1	2	2	2	1	2	2	3	1	2	2	2	3	2	2
Semester No	III		CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	3
Teacher Name	Parag Athawale		CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	3
Course Outcomes			CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	1
	CO1	To enable speaking and writing grammatically correct sentences in English	CO5															
	CO2	To develop effective writing skills.	Average	1.50	1.75	2.00	2.00	1.75	1.75	1.75	1.75	1.50	1.75	2.00	2.00	1.75	2.25	2.25
	CO3	To build fluency in English.																
	CO4	Students would build spoken and written competency in English.																
	CO5																	

Class		S.Y.B.Sc. Biotechnology	Course Outcome	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	1	1	2	3	1	2	2	2	1	2	2	3	2	3	2
Semester No	III		CO2	2	1	2	2	3	2	3	1	2	2	1	1	2	1	3
Teacher Name	Rajashri Bhope, Komal Sonawane		CO3	1	2	2	2	1	1	1	2	3	1	2	2	2	1	3
Course Outcomes			CO4	1	1	2	3	1	2	2	3	1	2	2	1	1	2	1
	CO1	Student will able to study of Prokaryotic and Eukaryotic cell structure	CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
	CO2	Along with this they will also learn protein estimation and separation methods.	Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	1.80	2.00	2.20
	CO3	Student will able to prepare reagent																
	CO4	Student will able to study karyotype analysis																
	CO5	Observation of cells under microscope																

Class		S.Y.B.Sc. Biotechnology		Program Outcomes												PSOs			
Subject Code		BBt-310		Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name		Practical in Bio analytical Techniques		CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	3	2
Semester No		III		CO2	2	2	1	1	3	2	3	1	2	1	2	2	3	1	2
Teacher Name		Komal Sonawane		CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	2
Course Outcomes				CO4	1	2	2	1	1	2	2	3	1	1	2	3	1	2	3
CO1		Practical in Bio analytical Techniques		CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
CO2		To provide scientific understanding of analytical techniques and detail interpretation of results		Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.20	2.00	2.20
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 $\lambda$ max of Protein, solutions using spectrophotometer																	

Class		S.Y.B.Sc. Biotechnology		Program Outcomes												PSOs			
Subject Code		BBt-311		Course Outcome	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	2	2	1	2	2	3	1	2	2	2	3	2	2
Semester No		III		CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	3
Teacher Name		Rajashri Bhope		CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	3
Course Outcomes				CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	1
CO1		Prepare lab solutions and reagent		CO5	1	1	2	3	1	2	2	3	1	2	2	1	3	2	2
CO2		Understanding instructions and operate DNA equipment		Average	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.00	2.20	2.20
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
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Class		S.Y.B.Sc. Biotechnology	Course Outcome	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	1	1	2	3	1	2	2	2	1	2	2	3	2	3	2	
Semester No	IV	CO2	2	1	2	2	3	2	3	1	2	2	1	1	2	1	3	
Teacher Name	Rajashri bhope	CO3	1	2	2	2	1	1	1	2	3	1	2	2	2	1	3	
Course Outcomes		CO4	1	1	2	3	1	2	2	3	1	2	2	1	1	2	1	
	CO1	Student will understand the basis of cell division and regulation	CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
	CO2	Students acquire knowledge of cell signalling and receptors	Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	1.80	2.00	2.20
	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		S.Y.B.Sc. Biotechnology	Course Outcome	Program Outcomes												PSOs		
Subject Code	BBt-402	PO1		PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Molecular Biology II	CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	3	2	
Semester No	IV	CO2	2	2	1	1	3	2	3	1	2	1	2	2	3	1	2	
Teacher Name	Rajashri bhope	CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	2	
Course Outcomes		CO4	1	2	2	1	1	2	2	3	1	1	2	3	1	2	3	
	CO1	Students will focus on the transcription process	CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
	CO2	Will understand regulation of gene expression	Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.20	2.00	2.20
	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		S.Y.B.Sc. Biotechnology	Course Outcome	Program Outcomes												PSOs		
Subject Code	BBt-403			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Immunology		CO1	1	2	2	2	1	2	2	3	1	2	2	2	3	2	2
Semester No	IV		CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	3
Teacher Name	Rajashri Bhope		CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	3
Course Outcomes			CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	1
	CO1	To promote critical thinking among students	CO5	1	1	2	3	1	2	2	3	1	2	2	1	3	2	2
	CO2	to provide students with a foundation in immunological processes;	Average	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.00	2.20	2.20
	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		S.Y.B.Sc. Biotechnology	Course Outcome	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	1	1	2	3	1	2	2	2	1	2	2	3	2	3	2
Semester No	IV		CO2	2	1	2	2	3	2	3	1	2	2	1	1	2	1	3
Teacher Name	Prashant Katke		CO3	1	2	2	2	1	1	1	2	3	1	2	2	2	1	3
Course Outcomes			CO4	1	1	2	3	1	2	2	3	1	2	2	1	1	2	1
	CO1	The course is so designed for acquiring knowledge to know the process of reproduction and the development of embryo.	CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2

CO2	The objective of this course is to provide a comprehensive understanding of the concepts of early animal development.	Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	1.80	2.00	2.20
CO3	Students taking this course must develop a critical appreciation of methodologies specifically used to study the process of embryonic development in animals.																
CO4	Understands about various concepts of genetics and its importance in human health																
CO5	Develops empathy and love towards the animals																

Class		S.Y.B.Sc. Biotechnology	Course Outcome	Program Outcomes												PSOs		
Subject Code	BBt-405			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Plant Development		CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	3	2
Semester No	IV		CO2	2	2	1	1	3	2	3	1	2	1	2	2	3	1	2
Teacher Name	Jyotsna Galande		CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	2
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	1	2	3
	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	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2

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.
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.

Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.20	2.00	2.20
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Class	S.Y.B.Sc. Biotechnology	Course Outcome	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	1	2	2	2	1	2	2	3	1	2	2	2	3	2	2
Semester No	IV	CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	3
Teacher Name	Asmita Gavhane	CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	3
Course Outcomes		CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	1
CO1	students will learn about applications of different microorganisms in various fields like food,dairy medical, industrial, pharmaceutical industries, environment and agricultural	CO5	1	1	2	3	1	2	2	3	1	2	2	1	3	2	2

	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	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.00	2.20	2.20
	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																
	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,lab oratory diagnosis,treatment and preventive measures																

Class	S.Y.B.Sc. Biotechnology	Course Outcome	Program Outcomes												PSOs		
Subject Code	BBt-407		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	AECC-III (Environment)	CO1	1	1	2	3	1	2	2	2	1	2	2	3	2	3	2
Semester No	IV	CO2	2	1	2	2	3	2	3	1	2	2	1	1	2	1	3

Teacher Name	Anuja Bhalerao	CO3	1	2	2	2	1	1	1	2	3	1	2	2	2	1	3	
Course Outcomes		CO4	1	1	2	3	1	2	2	3	1	2	2	1	1	2	1	
	CO1	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															
				2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
	CO2	Acquire knowledge on environment protection acts and understand the need to conserve environment by implementing policies with the help of different organizations.	Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	1.80	2.00	2.20
	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	S.Y.B.Sc. Biotechnology	Course Outcome	Program Outcomes												PSOs		
Subject Code	BBt-408		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	AECC- IV (Language Communication)	CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	3	2
Semester No	IV	CO2	2	2	1	1	3	2	3	1	2	1	2	2	3	1	2
Teacher Name	Parag Athawale	CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	2
Course Outcomes		CO4	1	2	2	1	1	2	2	3	1	1	2	3	1	2	3

	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	3	1	2	2	1	1	1	2	3	1	2	2	3	2
	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	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.20	2.00	2.20
	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	S.Y.B.Sc. Biotechnology	Course Outcome	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	2	1	2	2	3	1	2	2	2	3	2	2	
Semester No	IV	CO2	3	2	3	1	2	2	1	1	3	2	3	1	1	2	3	
Teacher Name	Rajashri Bhope	CO3	1	1	1	2	3	1	2	2	1	1	1	2	1	2	3	
Course Outcomes		CO4	1	2	2	3	1	2	2	1	1	2	2	3	2	3	1	
	CO1	Extraction of DNA from various sources	CO5	1	1	2	3	1	2	2	3	1	2	2	1	3	2	2
	CO2	Extraction of RNA from different sources	Average	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	1.40	1.80	2.00	1.80	2.00	2.20	2.20
	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		Course Outcome	Program Outcomes												PSOs			
S.Y.B.Sc. Biotechnology			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Code	BBt-410																	
Subject Name	Practical in Animal and Plant Development	CO1	1	1	2	3	1	2	2	2	1	2	2	3	2	3	2	
Semester No	IV	CO2	2	1	2	2	3	2	3	1	2	2	1	1	2	1	3	
Teacher Name	Komal Sonawane	CO3	1	2	2	2	1	1	1	2	3	1	2	2	2	1	3	
Course Outcomes		CO4	1	1	2	3	1	2	2	3	1	2	2	1	1	2	1	
	CO1	Prc. in ADP n PDP	CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
	CO2	Hands on training on different methods like dissection, sectioning and staining. Students well understood and depicted basic plant developmental diagrams	Average	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	1.80	2.00	2.20
	CO3	Gained knowledge of RAM, SAM and florally induced meristem by learnings various staining techniques																
	CO4	Students will understand how to perform various practical on microsporogenesis and female development by employing suitable technique																
	CO5	Students understood the basic concepts of embryogenesis and well able to differential in dicots and monocot plants at embryo development stage																

Class		Course Outcome	Program Outcomes												PSOs		
S.Y.B.Sc. Biotechnology			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Code	BBt-411																
Subject Name	Practical in Cell biology and immunology	CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	3	2
Semester No	IV	CO2	2	2	1	1	3	2	3	1	2	1	2	2	3	1	2

Teacher Name		Rajashri Bhope, Jyotsna Galande	CO3	3	1	2	2	1	1	1	2	1	2	2	2	3	1	2
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	1	2	3
	CO1	Differentiate between mitosis and meiosis	CO5	2	3	1	2	2	1	1	1	2	3	1	2	2	3	2
	CO2	Studying the antigen antibody reaction	Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	2.20	2.00	2.20
	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,																



<b>Academic Year :</b>	<b>2021-22</b>
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Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-501			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Industrial Microbiology		CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	1	1
Semester No	V		CO2	2	2	1	1	3	2	3	1	2	1	2	2	1	2	1
Teacher Name	Asmita Gavhane		CO3	3	1	2	2	1	1	1	2	1	2	2	2	2	1	2
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	2	1	1
	CO1	This course empasis on applications of biotechnology in industry..It helps students to know about various aspects of fermentation processes likes concept of fermentation and various types.	CO5															
	CO2	student will learn about methods of screening for industrial important microorganisms, strain improvment programs, and their preservation methods	Average	2	3	1	2	2	1	1	1	2	3	1	2	1	2	2
	CO3	This course empasis on applications of biotechnology in industry..It helps students to know about various aspects of fermentation processes likes concept of fermentation and various types.		1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	1.60	1.40	1.40
	CO4	The 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 fermentation media comonents, optimization sterilization methods																
	CO5	It also allows students to understand about upsream and downstream processing.																

Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-502			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	R- DNA technology		CO1	1	2	1	2	3	2	2	1	2	2	1	3	1	1	2
Semester No	V		CO2	2	1	3	2	1	2	3	2	2	1	1	2	2	1	1
Teacher Name	Rajashri Bhope		CO3	3	2	1	1	2	1	1	1	2	2	2	2	1	2	2
Course Outcomes			CO4	1	2	1	2	1	2	2	1	2	3	1	3	1	1	2
	CO1	This course teaches RDNA technology techniques and their application in the field of genetic engineering	CO5	2	1	2	3	2	1	1	2	1	1	3	2	2	2	1
	CO2	Course helps to understand the basic concept like tools and enzymes used in RDT	Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60
	CO3	They learn about plasmids, vectors and other vectors used for gene transfer																
	CO4	gain knowledge on the construction of genomic and cDNA libraries & its applications																
	CO5	Understand the concept and applications of PCR																

Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-503			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Plant Tissue Culture		CO1	2	1	3	2	1	2	3	2	2	1	1	2	1	1	2
Semester No	V		CO2	1	2	1	2	1	2	2	1	2	3	1	3	1	2	1
Teacher Name	Jyotsna Galande		CO3	1	2	1	2	3	2	2	1	2	2	1	3	2	1	2
Course Outcomes			CO4	3	2	1	1	2	1	1	1	2	2	2	2	1	1	2
	CO1	Students will understand the basic concepts and terminology used in plant tissue culture.	CO5	2	1	2	3	2	1	1	2	1	1	3	2	2	2	1
	CO2	- Students will understand the basic techniques to establish different types of in vitro cultures by themselves due to hand on training in the subject.	Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60

	CO3	Concept and calculations for media preparation very well learnt as the media used for different types of culture were prepared by the students.
	CO4	Concept and calculations for media preparation very well learnt as the media used for different types of culture were prepared by the students.
	CO5	The knowledge of tissue culture techniques is used for designing projects, practical performance, and preparation of glassware for practical.

Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-504			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Animal Tissue Culture		CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	1	1
Semester No	V		CO2	2	2	1	1	3	2	3	1	2	1	2	2	1	2	1
Teacher Name	Prashant Katke		CO3	3	1	2	2	1	1	1	2	1	2	2	2	2	1	2
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	2	1	1
	CO1	Develop a fundamental understanding of basic concepts of animal tissue culture methods and their applications in the field of Biotechnology.	CO5	2	3	1	2	2	1	1	1	2	3	1	2	1	2	2
	CO2	Evaluate applications of various concepts & techniques of animal and plant tissue culture to facilitate biotechnological advancement and innovations.	Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	1.60	1.40	1.40
	CO3	Utilize proper aseptic technique in laminar flow hood and laboratory bench.																
	CO4	Apply skills in culturing and maintaining mammalian cells including chick embryo cells.																
	CO5	Formulate and apply knowledge of fluorescent markers and stains in cell biology research.																

Class	T.Y.B.Sc. Biotechnology	Course	Program Outcomes												PSOs		
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Subject Code	BBt-505	Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Applied biotechnology I	CO1	1	2	1	2	3	2	2	1	2	2	1	3	1	1	2
Semester No	V	CO2	2	1	3	2	1	2	3	2	2	1	1	2	2	1	1
Teacher Name	Prashant Katke	CO3	3	2	1	1	2	1	1	1	2	2	2	2	1	2	2
Course Outcomes		CO4	1	2	1	2	1	2	2	1	2	3	1	3	1	1	2
	CO1	The course gives an introduction to various fields in Biotechnology such as Agriculture Waste Recycling, Biotechnology in Diagnosis Molecular Diagnostics, Marine Biotechnology and Nanobiotechnology															
	CO2	The candidate will obtain knowledge and understanding of Agriculture Waste Recycling and Biomass brequetting															
	CO3	The candidate will obtain knowledge and understanding of Marine derived pharmaceuticals															
	CO4	Students learn Biotechnology in Molecular Diagnostics															
	CO5	Understand the foundational concepts of molecular biology, and how these impact biotechnology research and development in the diverse fields that span healthcare and agriculture.															
		Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60

Class	T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-506	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Biodiversity and Systematics	CO1	2	1	3	2	1	2	3	2	2	1	1	2	1	1	2
Semester No	V	CO2	1	2	1	2	1	2	2	1	2	3	1	3	1	2	1
Teacher Name	Prashant Katke	CO3	1	2	1	2	3	2	2	1	2	2	1	3	2	1	2
Course Outcomes		CO4	3	2	1	1	2	1	1	1	2	2	2	2	1	1	2
	CO1	The course gives an introduction to terrestrial and aquatic biodiversity and conservation biology, and common methods to conserve the environment and the biological diversity.															
			2	1	2	3	2	1	1	2	1	1	3	2	2	2	1

	CO2	The candidate will obtain knowledge and understanding of Patterns and processes in biodiversity	Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60
	CO3	The candidate will obtain knowledge and understanding The values of biodiversity																
	CO4	The candidate will obtain knowledge and understanding The threats to biodiversity																
	CO5	The candidate will obtain knowledge and understanding Different methods within conservation biology																

Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-507			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	SEC – I : Summer Industrial Internship / Review writing/up Design or Case study Report		CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	1	1
Semester No	V		CO2	2	2	1	1	3	2	3	1	2	1	2	2	1	2	1
Teacher Name			CO3	3	1	2	2	1	1	1	2	1	2	2	2	1	2	
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	2	1	1
	CO1	Learn to appreciate work and its function in the economy.	CO5	2	3	1	2	2	1	1	1	2	3	1	2	1	2	2
	CO2	Develop work habits and attitudes necessary for job success.	Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	1.60	1.40	1.40
	CO3	Students will learn how to conduct and write a literature review.																
	CO4	This includes learning how to design a literature review and manage and analyze your data.																
	CO5	Students should be able to apply the skills obtained in writing generic business and scientific field reports.																

Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-508			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3

Subject Name	SEC – II: Project formulation and presentation		CO1	1	2	1	2	3	2	2	1	2	2	1	3	1	1	2
Semester No	V		CO2	2	1	3	2	1	2	3	2	2	1	1	2	2	1	1
Teacher Name			CO3	3	2	1	1	2	1	1	1	2	2	2	2	1	2	2
Course Outcomes			CO4	1	2	1	2	1	2	2	1	2	3	1	3	1	1	2
	CO1	Grasp the main issues and questions in project identification, formulation, and design	CO5	2	1	2	3	2	1	1	2	1	1	3	2	2	2	1
	CO2	Understand the processes to follow in formulating projects to identify problems for primary stakeholders and set appropriate project objectives	Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60
	CO3	Ensure that both alternative approaches and alternative means of implementation are fully considered and appropriate choices made in selecting the best means of achieving given objectives																
	CO4	Know how to formulate logically consistent projects and to specify the key project elements in a clear and precise way • identify, assess, and reduce project risks																
	CO5	Translate a project design in to implementation tools, particularly work plans																

Class	T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs			
Subject Code	BBt-509		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Practical in Industrial Microbiology	CO1	2	1	3	2	1	2	3	2	2	1	1	2	1	1	2	
Semester No	V	CO2	1	2	1	2	1	2	2	1	2	3	1	3	1	2	1	
Teacher Name	Asmita Gavhane	CO3	1	2	1	2	3	2	2	1	2	2	1	3	2	1	2	
Course Outcomes		CO4	3	2	1	1	2	1	1	1	2	2	2	2	1	1	2	
	CO1	The students will able to isolate industrially important microorganisms from nature	CO5	2	1	2	3	2	1	1	2	1	1	3	2	2	2	1
	CO2	The students will able to implement strain improvement by mutation and isolation and identifcaation of mutants	Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60

	CO3	The students are able to carry out primary metabolite production by using microranisms like organic acid.
	CO4	The students are able to carry out secondary metabolite production by using microranisms like antibiotic.
	CO5	The students learn to produce ethanol and wine at laboratory scale.It also allows students to know about qualitative and quantitative estimation of fermenttion products.

Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-510			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical in Plant Tissue Culture and Animal Tissue Culture		CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	1	1
Semester No	V		CO2	2	2	1	1	3	2	3	1	2	1	2	2	1	2	1
Teacher Name	Prashant Katke, Jyotsna Galande		CO3	3	1	2	2	1	1	1	2	1	2	2	2	1	2	
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	2	1	1
	CO1	The students become familiar with equipment used in animal and plant tissue culture.	CO5	2	3	1	2	2	1	1	1	2	3	1	2	1	2	2
	CO2	The students become familiar with aseptic techniques,stock preparation, media preparation used in animal and plant tissue culture	Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	1.60	1.40	1.40
	CO3	The students will understand the safety procedures need for tissue culture.																
	CO4	The student will learn different tissue culture techniquess as callus and suspension culture																
	CO5	The student will learn effect of differnet plant growth hormones																

Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-511			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical in R- DNA technology and Biodiversity		CO1	1	2	1	2	3	2	2	1	2	2	1	3	1	1	2
Semester No	V		CO2	2	1	3	2	1	2	3	2	2	1	1	2	2	1	1
Teacher Name	Rajashri Bhope		CO3	3	2	1	1	2	1	1	1	2	2	2	1	2	2	
Course Outcomes			CO4	1	2	1	2	1	2	2	1	2	3	1	3	1	1	2
	CO1	This course teaches rDNA technology techniques and their application in the field of genetic engineering	CO5	2	1	2	3	2	1	1	2	1	1	3	2	2	2	1
	CO2	After completion of this course, student will be able to	Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60
	CO3	They learn about plasmids, vectors and gain knowledge on the construction of cDNA libraries																
	CO4	knowledge on gene manipulation, gene expression, etc. which prepares them for further studies in the area of genetic engineering																
	CO5	To learn gene transfer process and restriction mapping																

Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-601			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Enzyme and Enzyme Technology		CO1	2	1	3	2	1	2	3	2	2	1	1	2	1	1	2
Semester No	VI		CO2	1	2	1	2	1	2	2	1	2	3	1	3	1	2	1
Teacher Name	Komal Sonawane		CO3	1	2	1	2	3	2	2	1	2	2	1	3	2	1	2
Course Outcomes			CO4	3	2	1	1	2	1	1	1	2	2	2	2	1	1	2
	CO1	It helps the students to learn the significant features of the biochemical catalysts.	CO5	2	1	2	3	2	1	1	2	1	1	3	2	2	2	1
	CO2	It helps the students to learn the methodology involved in assessing the enzyme activity and mechanism of enzyme action	Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60
	CO3	It illustrates the enzyme catalysis, kinetics and regulatory aspects.																



	CO4	Describe methods for selection and optimisation of industrial enzymes using genetic and biochemical techniques,
	CO5	

Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBT-602			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Agriculture Biotechnology		CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	1	1
Semester No	VI		CO2	2	2	1	1	3	2	3	1	2	1	2	2	1	2	1
Teacher Name	Jyotsna Galande		CO3	3	1	2	2	1	1	1	2	1	2	2	2	1	2	
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	2	1	1
	CO1	Students will learn introduction to agricultural biotechnology, its scope, role of it in india, world, concept of urban agriculture	CO5															
	CO2	Students will learn classical way of agricultur	Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	1.60	1.40	1.40
	CO3	Students will learn concept and application of e-agriculture , use of ICT in agriculture																
	CO4	Student will learnhoe to make draught and herbicide tolerant varities																
	CO5	Students will how to use greenhouse technology and computer controlled environment																

Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBT-603			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Applied Biotechnology II		CO1	1	2	1	2	3	2	2	1	2	2	1	3	1	1	2
Semester No	VI		CO2	2	1	3	2	1	2	3	2	2	1	1	2	2	1	1
Teacher Name	Rajashri Bhope		CO3	3	2	1	1	2	1	1	1	2	2	2	2	1	2	2
Course Outcomes			CO4	1	2	1	2	1	2	2	1	2	3	1	3	1	1	2
	CO1	Students will be able to gain fundamental knowledge in Environmental biotechnology and their applications	CO5															
	CO2	Develop and analyse models for enzyme catalysed reactions in cellular bioengineering and synthetic biology	Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60

	CO3	Students will be able to understand various facets of molecular procedures and basics of genomics, proteomics and metabolomics that could be employed in early diagnosis and prognosis of human diseases.
	CO4	Students will be able to gain hands on experience in gene cloning, protein expression and purification
	CO5	Students will be able to understand various facts of Stem cells and technology that could be employed in treatment of human diseases.

Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBT-604		Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Food and Pharmaceutical Biotechnology		CO1	2	1	3	2	1	2	3	2	2	1	1	2	1	1	2
Semester No	VI		CO2	1	2	1	2	1	2	2	1	2	3	1	3	1	2	1
Teacher Name	Asmita Gavhane		CO3	1	2	1	2	3	2	2	1	2	2	1	3	2	1	2
Course Outcomes			CO4	3	2	1	1	2	1	1	1	2	2	2	2	1	1	2
	CO1	Students will be able to understand the basics of food and human nutrition	CO5	2	1	2	3	2	1	1	2	1	1	3	2	2	2	1
	CO2	Students will be able to understand basic concepts of food microbiology and general principles of food hygiene and food safety management systems.	Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60
	CO3	Students will be able to learn about various food packaging techniques, types of non alcoholic beverages and about quality assurance programmes																
	CO4	To understand the clinical biochemistry of macronutrients.																
	CO5	To understand the cellular level functions, Drug development and discovery of new drugs.																

Class	T.Y.B.Sc. Biotechnology	Course	Program Outcomes												PSOs		
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Subject Code	BBt-605	Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Bioinformatics	CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	1	1
Semester No	VI	CO2	2	2	1	1	3	2	3	1	2	1	2	2	1	2	1
Teacher Name	Prashant Katke	CO3	3	1	2	2	1	1	1	2	1	2	2	2	2	1	2
Course Outcomes		CO4	1	2	2	1	1	2	2	3	1	1	2	3	2	1	1
	CO1	To build in candidates a strong foundation in interdisciplinary sciences such as Computer Sciences and Biological Sciences.	CO5														
	CO2	to develop accelerated and precise technologies for industrial problems, and prepare them for productive careers in fields of biotechnology, pharmaceutical, bioinformatics, Research, and healthcare industries	Average	2	3	1	2	2	1	1	1	2	3	1	2	1	2
	CO3	to develop accelerated and precise technologies for industrial problems, and prepare them for productive careers in fields of biotechnology, pharmaceutical, bioinformatics, Research, and healthcare industries		1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	1.60	1.40
	CO4	To address the challenges arising from the huge amount of genomic data and to overcome by analyzing and individualizing the corresponding drug responses towards appropriate drug specified dosages.															
	CO5	The course put more emphasis on understanding the disease related problems at molecular level.															

Class	T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-606	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Bio safety and Bioethics and IPR	CO1	1	2	1	2	3	2	2	1	2	2	1	3	1	1	2
Semester No	VI	CO2	2	1	3	2	1	2	3	2	2	1	1	2	2	1	1
Teacher Name	Asmita Gavhane	CO3	3	2	1	1	2	1	1	1	2	2	2	2	1	2	2
Course Outcomes		CO4	1	2	1	2	1	2	2	1	2	3	1	3	1	1	2

	CO1	To understand the rationale for and against IPR and especially patents.	CO5	2	1	2	3	2	1	1	2	1	1	3	2	2	2	1
	CO2	To understand why India has adopted National IPR Policy and be familiar with broad outline of patent regulations;	Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60
	CO3	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.																
	CO4	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	To understand ethical aspects related to biological, biomedical, health care and biotechnology research.																

Class	T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs			
Subject Code	BBT-607 & 608		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	SEC – III & SEC – IV : Project	CO1	2	1	3	2	1	2	3	2	2	1	1	2	1	1	2	
Semester No	VI	CO2	1	2	1	2	1	2	2	1	2	3	1	3	1	2	1	
Teacher Name		CO3	1	2	1	2	3	2	2	1	2	2	1	3	2	1	2	
Course Outcomes		CO4	3	2	1	1	2	1	1	1	2	2	2	2	1	1	2	
	CO1	Students who complete this course will be able to understand and comprehend the basics in research methodology and applying them in research/ project work.	CO5	2	1	2	3	2	1	1	2	1	1	3	2	2	2	1
	CO2	This course will help them to select an appropriate research design.	Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60

	CO3	With the help of this course, students will be able to take up and implement a research project/ study.
	CO4	Develop a rigorous experiment, sampling program and/or model that addresses the aims of the project
	CO5	Identify areas of greatest need with respect to project assessment, and directions for future research in that field

Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-609			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical in Enzyme Technology		CO1	1	2	2	3	1	2	2	2	1	1	2	3	2	1	1
Semester No	VI		CO2	2	2	1	1	3	2	3	1	2	1	2	2	1	2	1
Teacher Name	Komal Sonawane		CO3	3	1	2	2	1	1	1	2	1	2	2	2	1	2	2
Course Outcomes			CO4	1	2	2	1	1	2	2	3	1	1	2	3	2	1	1
	CO1	Student will able to isolate enzyme	CO5	2	3	1	2	2	1	1	1	2	3	1	2	1	2	2
	CO2	student will able to determine enzyme activity	Average	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	1.60	1.40	1.40
	CO3	student will able to check effect of different parameters on enzyme activity																
	CO4	Student will able to do Enzyme Immobilisation using gel entrapment method																
	CO5	Student will able to check effect of Substrate concentration on enzyme activity																

Class		T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs		
Subject Code	BBt-610			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name	Practical in Agriculture Biotechnology and Bioinformatics		CO1	1	2	1	2	3	2	2	1	2	2	1	3	1	1	2
Semester No	VI		CO2	2	1	3	2	1	2	3	2	2	1	1	2	2	1	1

Teacher Name	Jyotsna Galande		CO3	3	2	1	1	2	1	1	1	2	2	2	2	1	2	2
Course Outcomes			CO4	1	2	1	2	1	2	2	1	2	3	1	3	1	1	2
	CO1	student will learn Production of Spirulina/Azolla culture	CO5	2	1	2	3	2	1	1	2	1	1	3	2	2	2	1
	CO2	Estimation of chlorophyll and protein from Spirulina/Azolla culture	Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60
	CO3	Isolation of Rhizobium from root nodules of leguminous crop and development of Rhizobium or Azotobacter Biofertilizer																
	CO4	Demonstration of effect of Biofertilizer (above prepared Rhizobium or Azotobacter) on plant growth using pot culture																
	CO5	Demonstration of effect of herbicide (anyone) on plant growth using pot culture																

Class	T.Y.B.Sc. Biotechnology	Course Outcomes	Program Outcomes												PSOs			
Subject Code	BBt-611		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
Subject Name	Practical in Food and Pharmaceutical Biotechnology	CO1	2	1	3	2	1	2	3	2	2	1	1	2	1	1	2	
Semester No	VI	CO2	1	2	1	2	1	2	2	1	2	3	1	3	1	2	1	
Teacher Name	Asmita Gvhane, Prashant Katke	CO3	1	2	1	2	3	2	2	1	2	2	1	3	2	1	2	
Course Outcomes		CO4	3	2	1	1	2	1	1	1	2	2	2	2	1	1	2	
	CO1	Students understand Kinetics and Statistics to bioprocesses	CO5	2	1	2	3	2	1	1	2	1	1	3	2	2	1	
	CO2	Students learn Design different types of bioreactors	Average	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	1.40	1.40	1.60
	CO3	Develop the bioprocess economics to industrial bioprocesses																
	CO4	Analyze the bioreactors detailed design of bioprocess industry equipment																
	CO5	Students perform experiments to detect and isolation of anti-infectives from plant and antibiotic potent test																

Class		Course Outcomes	Program Outcomes												PSOs		
Subject Code			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Subject Name		CO1															
Semester No		CO2															
Teacher Name		CO3															
Course Outcomes		CO4															
	CO1	CO5															
	CO2	Average	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	CO3																
	CO4																
	CO5																

**CO-PO Mapping**

		Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
FY	FY	1 BBT-101	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	
		2 BBT-102	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	2.00	1.40	1.80	2.00	1.80
		3 BBT-103	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.80	1.40	1.60	1.80	2.40
		4 BBT-104	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	1.80	2.00	1.60	1.80
		5 BBT-105	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	2.00	1.40	1.80	2.00	1.80
		6 BBT-106	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.80	1.40	1.60	1.80	2.40
		7 BBT-107	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	1.80	2.00	1.60	1.80
		8 BBT-108	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	2.00	1.40	1.80	2.00	1.80
		9 BBT-109	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	1.80	2.00	1.60	1.80
		10 BBT-110	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	2.00	1.40	1.80	2.00	1.80
		11 BBT-111	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.80	1.40	1.60	1.80	2.40
		12 BBT-112	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	2.00	1.40	1.80	2.00	1.80
		13 BBT-201	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.80	1.40	1.60	1.80	2.40
		14 BBT-202	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	1.80	2.00	1.60	1.80
SY	SY	1 BBT-301	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	
		2 BBT-302	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	2.00	1.40	1.80	2.00	1.80
		3 BBT-303	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	2.00	1.60	1.80	1.80
		4 BBT-304	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.80	1.40	1.60	1.80	2.40
		5 BBT-305	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	2.00	1.40	1.80	2.00	1.80
		6 BBT-306	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	1.80	2.00	1.60	1.80
		7 BBT-307	2.00	1.67	1.67	2.00	1.67	1.67	2.00	1.67	1.67	1.33	1.33	2.00	2.33
		8 BBT-308	1.50	1.75	2.00	2.00	1.75	1.75	1.75	1.75	1.75	1.50	1.75	2.00	2.00
		9 BBT-309	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	1.80	2.00	1.60	1.80
		10 BBT-310	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.80	1.40	1.60	1.80	2.40
		11 BBT-311	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	2.00	1.40	1.80	2.00	1.80
		12 BBT-401	1.40	1.60	1.80	2.40	1.60	1.60	1.80	1.80	1.80	1.80	2.00	1.60	1.80
		13 BBT-402	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.80	1.40	1.60	1.80	2.40
		14 BBT-403	1.40	1.60	2.00	2.20	1.60	1.80	1.80	2.00	2.00	1.40	1.80	2.00	1.80
	SY	1 BBT-501	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40	
		2 BBT-502	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	
		3 BBT-503	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	
		4 BBT-504	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.80	1.40	1.60	1.80	2.40
		5 BBT-505	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	
		6 BBT-506	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40	
		7 BBT-507	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.80	1.40	1.60	1.80	2.40
		8 BBT-508	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.80	1.60	2.40
		9 BBT-509	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.80	1.60	2.40
		10 BBT-510	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.80	1.40	1.60	1.80	2.40
		11 BBT-511	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.80	1.60	2.40
		12 BBT-601	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.80	1.60	2.40
		13 BBT-602	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.80	1.40	1.60	1.80	2.40
		14 BBT-603	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.80	1.60	2.40
		15 BBT-604	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.80	1.60	2.40



		16	BBt-605	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40
		17	BBt-606	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40
		18	BBt-607 & 608	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40
		19	BBt-609	1.80	2.00	1.60	1.80	1.60	1.60	1.80	1.80	1.40	1.60	1.80	2.40
		20	BBt-610	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40
TY	TY	21	BBt-611	1.80	1.60	1.60	2.00	1.80	1.60	1.80	1.40	1.80	1.80	1.60	2.40

**CO-PO ATTAINMENT**

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1.176	1.344	1.512	2.016	1.344	1.344	1.512	1.512	1.512	1.68	1.344	1.512
1.101333	1.258667	1.573333	1.730666667	1.258667	1.416	1.416	1.573333	1.101333	1.416	1.573333	1.416
1.8	2	1.6	1.8	1.6	1.6	1.8	1.8	1.4	1.6	1.8	2.4
1.4	1.6	1.8	2.4	1.6	1.6	1.8	1.8	1.8	2	1.6	1.8
1.4	1.6	2	2.2	1.6	1.8	1.8	2	1.4	1.8	2	1.8
1.8	2	1.6	1.8	1.6	1.6	1.8	1.8	1.4	1.6	1.8	2.4
1.4	1.6	1.8	2.4	1.6	1.6	1.8	1.8	1.8	2	1.6	1.8
0.728	0.832	1.04	1.144	0.832	0.936	0.936	1.04	0.728	0.936	1.04	0.936
1.4	1.6	1.8	2.4	1.6	1.6	1.8	1.8	1.8	2	1.6	1.8
1.4	1.6	2	2.2	1.6	1.8	1.8	2	1.4	1.8	2	1.8
1.8	2	1.6	1.8	1.6	1.6	1.8	1.8	1.4	1.6	1.8	2.4
1.4	1.6	2	2.2	1.6	1.8	1.8	2	1.4	1.8	2	1.8
0.936	1.04	0.832	0.936	0.832	0.832	0.936	0.936	0.728	0.832	0.936	1.248
0.728	0.832	0.936	1.248	0.832	0.832	0.936	0.936	0.936	1.04	0.832	0.936
1.8	2	1.6	1.8	1.6	1.6	1.8	1.8	1.4	1.6	1.8	2.4
1.4	1.6	2	2.2	1.6	1.8	1.8	2	1.4	1.8	2	1.8
1.250667	1.429333	1.608	2.144	1.429333	1.429333	1.608	1.608	1.608	1.786667	1.429333	1.608
1.8	2	1.6	1.8	1.6	1.6	1.8	1.8	1.4	1.6	1.8	2.4
1.4	1.6	2	2.2	1.6	1.8	1.8	2	1.4	1.8	2	1.8
1.4	1.6	1.8	2.4	1.6	1.6	1.8	1.8	1.8	2	1.6	1.8
2	1.666667	1.666667	2	1.666667	1.666667	2	1.666667	1.333333	1.333333	2	2.333333
1.5	1.75	2	2	1.75	1.75	1.75	1.75	1.5	1.75	2	2
1.4	1.6	1.8	2.4	1.6	1.6	1.8	1.8	1.8	2	1.6	1.8
1.8	2	1.6	1.8	1.6	1.6	1.8	1.8	1.4	1.6	1.8	2.4
1.4	1.6	2	2.2	1.6	1.8	1.8	2	1.4	1.8	2	1.8
0.952	1.088	1.224	1.632	1.088	1.088	1.224	1.224	1.224	1.36	1.088	1.224
1.8	2	1.6	1.8	1.6	1.6	1.8	1.8	1.4	1.6	1.8	2.4
1.4	1.6	2	2.2	1.6	1.8	1.8	2	1.4	1.8	2	1.8
1.8	2	1.6	1.8	1.6	1.6	1.8	1.8	1.4	1.6	1.8	2.4
1.8	1.6	1.6	2	1.8	1.6	1.8	1.4	1.8	1.8	1.6	2.4
1.512	1.344	1.344	1.68	1.512	1.344	1.512	1.176	1.512	1.512	1.344	2.016
0.936	1.04	0.832	0.936	0.832	0.832	0.936	0.936	0.728	0.832	0.936	1.248
1.512	1.344	1.344	1.68	1.512	1.344	1.512	1.176	1.512	1.512	1.344	2.016
1.8	1.6	1.6	2	1.8	1.6	1.8	1.4	1.8	1.8	1.6	2.4
1.8	2	1.6	1.8	1.6	1.6	1.8	1.8	1.4	1.6	1.8	2.4
1.8	1.6	1.6	2	1.8	1.6	1.8	1.4	1.8	1.8	1.6	2.4
1.8	1.6	1.6	2	1.8	1.6	1.8	1.4	1.8	1.8	1.6	2.4
1.8	2	1.6	1.8	1.6	1.6	1.8	1.8	1.4	1.6	1.8	2.4
1.8	1.6	1.6	2	1.8	1.6	1.8	1.4	1.8	1.8	1.6	2.4
1.8	1.6	1.6	2	1.8	1.6	1.8	1.4	1.8	1.8	1.6	2.4
0.936	1.04	0.832	0.936	0.832	0.832	0.936	0.936	0.728	0.832	0.936	1.248
1.8	1.6	1.6	2	1.8	1.6	1.8	1.4	1.8	1.8	1.6	2.4

0.936	0.832	0.832	1.04	0.936	0.832	0.936	0.728	0.936	0.936	0.832	1.248
1.8	2	1.6	1.8	1.6	1.6	1.8	1.8	1.4	1.6	1.8	2.4
0.936	0.832	0.832	1.04	0.936	0.832	0.936	0.728	0.936	0.936	0.832	1.248
1.8	1.6	1.6	2	1.8	1.6	1.8	1.4	1.8	1.8	1.6	2.4
1.8	2	1.6	1.8	1.6	1.6	1.8	1.8	1.4	1.6	1.8	2.4
1.8	1.6	1.6	2	1.8	1.6	1.8	1.4	1.8	1.8	1.6	2.4
1.8	1.6	1.6	2	1.8	1.6	1.8	1.4	1.8	1.8	1.6	2.4

**Percentage CO-PO ATTAINMENT**

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
84	84	84	84	84	84	84	84	84	84	84	84
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
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
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
52	52	52	52	52	52	52	52	52	52	52	52
100	100	100	100	100	100	100	100	100	100	100	100
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
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
100	100	100	100	100	100	100	100	100	100	100	100
68	68	68	68	68	68	68	68	68	68	68	68
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
84	84	84	84	84	84	84	84	84	84	84	84
52	52	52	52	52	52	52	52	52	52	52	52
84	84	84	84	84	84	84	84	84	84	84	84
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
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
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
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

**CO-PSO MAPPING**

	Course	PSO1	PSO2	PSO3
1	BBt-101	1.80	2.00	2.20
2	BBt-102	2.00	2.20	2.20
3	BBt-103	2.20	2.00	2.20
4	BBt-104	2.20	2.20	2.00
5	BBt-105	2.00	2.20	2.20
6	BBt-106	2.20	2.20	2.00
7	BBt-107	2.20	2.00	2.20
8	BBt-108	2.00	2.20	2.00
9	BBt-109	1.80	2.00	2.20
10	BBt-110	2.00	2.20	2.20
11	BBt-111	2.20	2.00	2.20
12	BBt-112	2.00	2.20	2.20
13	BBt-201	2.20	2.20	2.00
14	BBt-202	2.00	2.20	2.20
1	BBt-301	2.20	2.00	2.20
2	BBt-302	2.00	2.20	2.20
3	BBt-303	1.80	2.00	2.20
4	BBt-304	2.20	2.00	2.20
5	BBt-305	2.00	2.20	2.20
6	BBt-306	1.80	2.00	2.20
7	BBt-307	2.67	1.67	2.00
8	BBt-308	1.75	2.25	2.25
9	BBt-309	1.80	2.00	2.20
10	BBt-310	2.20	2.00	2.20
11	BBt-311	2.00	2.20	2.20
12	BBt-401	1.80	2.00	2.20
13	BBt-402	2.20	2.00	2.20
14	BBt-403	2.00	2.20	2.20
1	BBt-501	1.60	1.40	1.40
2	BBt-502	1.40	1.40	1.60
3	BBt-503	1.40	1.40	1.60
4	BBt-504	1.60	1.40	1.40
5	BBt-505	1.40	1.40	1.60
6	BBt-506	1.40	1.40	1.60
7	BBt-507	1.60	1.40	1.40
8	BBt-508	1.40	1.40	1.60
9	BBt-509	1.40	1.40	1.60
10	BBt-510	1.60	1.40	1.40
11	BBt-511	1.40	1.40	1.60
12	BBt-601	1.40	1.40	1.60
13	BBt-602	1.60	1.40	1.40
14	BBt-603	1.40	1.40	1.60
15	BBt-604	1.40	1.40	1.60
16	BBt-605	1.60	1.40	1.40
17	BBt-606	1.40	1.40	1.60
18	BBt-607 &	1.40	1.40	1.60

**CO-PSO ATTAINMENT**

	Course	PSO1	PSO2	PSO3
	BBt-101	1.512	1.68	1.848
	BBt-102	1.573333	1.730667	1.730667
	BBt-103	2.2	2	2.2
	BBt-104	2.2	2.2	2
	BBt-105	2	2.2	2.2
	BBt-106	2.2	2.2	2
	BBt-107	2.2	2	2.2
	BBt-108	1.04	1.144	1.04
	BBt-109	1.8	2	2.2
	BBt-110	2	2.2	2.2
	BBt-111	2.2	2	2.2
	BBt-112	2	2.2	2.2
	BBt-201	1.144	1.144	1.04
	BBt-202	1.04	1.144	1.144
	BBt-301	2.2	2	2.2
	BBt-302	2	2.2	2.2
	BBt-303	1.608	1.786667	1.965333
	BBt-304	2.2	2	2.2
	BBt-305	2	2.2	2.2
	BBt-306	1.8	2	2.2
	BBt-307	2.666667	1.666667	2
	BBt-308	1.75	2.25	2.25
	BBt-309	1.8	2	2.2
	BBt-310	2.2	2	2.2
	BBt-311	2	2.2	2.2
	BBt-401	1.224	1.36	1.496
	BBt-402	2.2	2	2.2
	BBt-403	2	2.2	2.2
	BBt-501	1.6	1.4	1.4
	BBt-502	1.4	1.4	1.6
	BBt-503	1.176	1.176	1.344
	BBt-504	0.832	0.728	0.728
	BBt-505	1.176	1.176	1.344
	BBt-506	1.4	1.4	1.6
	BBt-507	1.6	1.4	1.4
	BBt-508	1.4	1.4	1.6
	BBt-509	1.4	1.4	1.6
	BBt-510	1.6	1.4	1.4
	BBt-511	1.4	1.4	1.6
	BBt-601	1.4	1.4	1.6
	BBt-602	0.832	0.728	0.728
	BBt-603	1.4	1.4	1.6
	BBt-604	0.728	0.728	0.832
	BBt-605	1.6	1.4	1.4
	BBt-606	0.728	0.728	0.832
	BBt-607 & 608	1.4	1.4	1.6

**Percentage CO-PSO ATTAINMENT**

	Course	PSO1	PSO2	PSO3
	BBt-101	84	84	84
	BBt-102	78.66667	78.66667	78.66667
	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	52	52	52
	BBt-109	100	100	100
	BBt-110	100	100	100
	BBt-111	100	100	100
	BBt-112	100	100	100
	BBt-201	52	52	52
	BBt-202	52	52	52
	BBt-301	100	100	100
	BBt-302	100	100	100
	BBt-303	89.33333	89.33333	89.33333
	BBt-304	100	100	100
	BBt-305	100	100	100
	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	68	68	68
	BBt-402	100	100	100
	BBt-403	100	100	100
	BBt-501	100	100	100
	BBt-502	100	100	100
	BBt-503	84	84	84
	BBt-504	52	52	52
	BBt-505	84	84	84
	BBt-506	100	100	100
	BBt-507	100	100	100
	BBt-508	100	100	100
	BBt-509	100	100	100
	BBt-510	100	100	100
	BBt-511	100	100	100
	BBt-601	100	100	100
	BBt-602	52	52	52
	BBt-603	100	100	100
	BBt-604	52	52	52
	BBt-605	100	100	100
	BBt-606	52	52	52
	BBt-607 &	100	100	100

FY

SY



19	BBt-609	1.60	1.40	1.40
20	BBt-610	1.40	1.40	1.60
21	BBt-611	1.40	1.40	1.60

BBt-609	1.6	1.4	1.4
BBt-610	1.4	1.4	1.6
BBt-611	1.4	1.4	1.6

BBt-609	100	100	100
BBt-610	100	100	100
BBt-611	100	100	100