

Academic Year	2022-23
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**B.P.H.E. Society's
Ahmednagar College, Ahmednagar
Internal Quality Assurance Cell
CO, PO, and PSO Attainment Sheet**

Department Name	Botany
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Program Name	M.Sc. (PG)
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Program Outcomes(PO)

PO1	Understand the scope and significance of the discipline.
PO2	In order to make students open-minded and curious, we try our best to enhance and develop a scientific attitude.
PO3	We make the students fit for the society by enabling them to work hard. Make the students exposed to the diverse life forms.
PO4	Make them skilled in practical work, experiments, laboratory equipment and to interpret correctly on biological materials and data.
PO5	Develop interest in Biological research. Encourage the students to do research in related disciplines.
PO6	Develop a thirst to preserve the natural resources and environment.
PO7	Develop the ability for the application of acquired knowledge in various fields of life so as to make our country self-sufficient
PO8	Appreciate and apply ethical principles to biological science research and studies
PO9	Imbibe love and curiosity towards nature through the living plants.
PO10	
PO11	
PO12	

Program Specific Outcome(PSO)

PSO1	Understanding the classification of plants from cryptogams to Spermatophyte. Identification of the flora within field enhances basics of plants. Study of biodiversity in relation to habitat will correlates with climate change, land and forest degradation. Application of Botany in agriculture is through study of plant pathology.
PSO2	Understand the ultra structure and function of cell membranes, cell communications, signaling, genetics, anatomy, taxonomy, ecology and plant Physiology and biochemistry. To understand the multi functionality of plant cells in production of fine chemicals and their wide spread industrial applications.

PSO3	Molecular and Physiological adaptations in plants in response to biotic and abiotic stress. Genes responsible for stress tolerance genetic engineering of plants.
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Academic Year :	2022-23
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Class		M.Sc. I	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40111	Course Outcomes		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOUT 111: Botany Theory Paper I-Plant Systematics I	CO1	2	2	2	2	2	2	2	2	2	2	2	2	
Semester No	I	CO2	2	2	2	2	2	2	2	2	2	2	2	2	
Teacher Name	Dr. Sudhir Suryavanshi (Algae) Dr. Prasad Y. Lamrood (Fungi) & Dr. Nisha Godse (Bryophyte)	CO3	2	2	2	2	2	2	2	2	2	2	2	2	
Course Outcomes		CO4	2	2	2	2	2	2	2	2	2	2	2	2	
	CO1	Students will learn the diversity of cryptogams	CO5	2	2	2	2	2	2	2	2	2	2	2	
	CO2	The students will learn basic aspects of Fungi including taxonomy	Average	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
	CO3	Students will learn charactes of various subdivisions with respect to distinguishing characters, types of Plasmodium and fruit bodies, Life cycle pattern													
	CO4	Ability to understand the core concepts and classification of Higher cryptogams													
	CO5	Abilty to understand the morphology, anatomy,life cycles of bryophytes													

Class		M.Sc. I	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40112	Course Outcomes		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOUT 112: Botany Theory Paper II-Cell Biology and Evolution	CO1	3	3	2	3	2	2	3	3	3	3	3	3	
Semester No	I	CO2	2	2	2	2	3	2	2	2	3	3	3	3	
Teacher Name	Mr.Sagar Bawake	CO3	2	2	2	2	2	2	2	2	3	3	3	3	
Course Outcomes		CO4	3	3	2	2	2	3	2	2	3	3	3	3	

	CO1	Students will get knowledge about plant cell, cell theory, organization of cell, various organelles and their function from plant cell.	CO5	3	3	2	2	3	2	3	3	2	3	3	3
	CO2	will learn about nucleus & its composition, ribosomes, cytoskeleton, signal transduction and signaling molecule.	Average	2.60	2.60	2.00	2.20	2.40	2.20	2.40	2.40	2.80	3.00	3.00	3.00
	CO3	Phosphate signaling, nuclear signaling and serine threonine signaling.													
	CO4	Getting knowledge about cell cycle and cell aging process.													
	CO5	They will be able to understand the earth formation, Geological time scale, Origin of cells, Concepts of natural evolution, Population genetics.													

Class		MSc I	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40113			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOUT 113: Botany Theory Paper III- Cytogenetics & Plant Breeding		CO1	2	1	3	2	1	2	2	3	2	2	2	2
Semester No	I		CO2	2	3	1	1	3	2	1	2	2	2	1	2
Teacher Name	Sudhir Bale & Dr. Nisha Godse		CO3	1	1	2	2	2	1	2	1	3	3	2	1
Course Outcomes			CO4	2	2	2	2	3	3	2	2	2	2	3	1
	CO1	Ability to understand concepts of classical genetics viz; Mendelian, Gene interaction, cytoplasmic inheritance etc	CO5	2	2	2	2	2	2	2	2	2	2	2	1
	CO2	Ability to understand concepts of Linkage and recombination and mutation	Average	1.80	1.80	2.00	1.80	2.20	2.00	1.80	2.00	2.20	2.20	2.00	1.40
	CO3	Ability to understand Microbial genetics, cytogenetics viz; karyotyping, chromosomal anomalies etc													
	CO4	Students will comprehend the core concepts of microbial genetics													
	CO5	students will learn the basic concepts of plant breeding													

Class	M.Sc. I		Program Outcomes									PSOs		
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Subject Code	40114P	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BODT 114: Pomoculture and Fruit Processing Tech.	CO1	3	3	3	3	3	3	3	3	3	3	3	3
Semester No		CO2	3	3	3	3	3	3	3	3	3	3	3	3
Teacher Name	Prof. A.A.Kulkarni	CO3	3	3	3	3	3	3	3	3	3	3	3	3
Course Outcomes		CO4	3	3	3	3	3	2	3	2	2	3	3	3
	CO1	Students will get the knowledge of Fruittrees and its market status at national and Internationsl level	CO5	3	3	3	3	3	3	3	3	3	3	3
	CO2	Students will learn different techniques of propagation of plants , its training and pruning methods	Average	3.00	3.00	3.00	3.00	3.00	2.67	3.00	2.67	2.67	3.00	3.00
	CO3	Students will get aquinted with fruit maturity indices, preservation and its marketing												
	CO4	Students will learn different methods of fruit preservation												
	CO5	Studnets will get the knowledge of preparation of various fruit processing industry												

Class	M.Sc. I	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40114 T (B)	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BODP 114: Botany practical paper based on BODT 114	CO1	3	3	3	3	3	3	3	3	3	3	3	3
Semester No	I	CO2	3	3	3	3	3	3	3	3	3	3	3	3
Teacher Name	Prof. A.A.Kulkarni	CO3	3	3	3	3	3	3	3	3	3	3	3	3
Course Outcomes		CO4	3	3	3	3	3	2	3	2	2	3	3	3
	CO1	Students will get practical knowledge of Fruittrees and its market status at national and Internationsl level	CO5	3	3	3	3	3	3	3	3	3	3	3
	CO2	Students will get hands on training on different techniques of propagation of plants , its training and pruning methods	Average	3.00	3.00	3.00	3.00	3.00	2.67	3.00	2.67	2.67	3.00	3.00
	CO3	Students will undestand practically the fruit maturity indices, preservation and its marketing												
	CO4	Students will practically carry out different methods of fruit preservation												

	CO5	Students will get the knowledge and perform preparation of various fruit processing industry
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Class		<u>M.Sc. I</u>	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40115			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOUP 115: Botany practical paper based on BOUT 111, 112 & 113		CO1	3	3	3	2	3	3	2	1	2	3	3	3
Semester No	I		CO2	2	2	3	2	3	3	3	1	1	2	2	2
Teacher Name	Dr. Prasad Y. Lamrood, Mr. Sagar Bawake, Dr Sudhir Suryawanshi, Dr. Nisha Godse		CO3	2	3	2	3	2	3	1	2	2	2	2	3
Course Outcomes			CO4	2	2	2	2	2	2	2	2	2	2	2	2
	CO1	Students will learn fungal members from each sub division	CO5	2	2	2	2	2	2	2	2	2	2	2	2
	CO2	Getting idea and hands on training to isolate mitochondria and lysosome to check its activity.	Average	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	CO3	Hands on experience of studying meiosis and mitosis.													
	CO4	getting an idea about experimental techniques of floral biology													
	CO5	getting an hands on training on various technique like colchicine treatment.													

Class		<u>M.Sc. I</u>	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40211			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOUT 121: Botany Theory Paper I-Plant Systematics -II		CO1	2	2	2	2	2	2	2	2	2	2	2	2
Semester No	I		CO2	2	2	2	2	2	2	2	2	2	2	2	2
Teacher Name	Prof. B.M. Gaykar & Dr. Nisha Godse		CO3	2	2	2	2	2	2	2	2	2	2	2	2
Course Outcomes			CO4	2	2	2	2	2	2	2	2	2	2	2	2
	CO1	ability to understand the classification of Angiospermic plants	CO5	2	2	2	2	2	2	2	2	2	2	2	2
	CO2	Ability to understand the basic concepts of Angiosperms	Average	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

	CO3	Ability to comprehend the core concepts of Gymnosperms
	CO4	ability to understand the classification and life cycle of gymnosperms
	CO5	ability to comprehend the morphology, anatomy and reproductive structures of each order of gymnosperms

Class		M.Sc. I	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40212			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOU122: Botany Theory Paper II- Molecular Biology		CO1	3	3	3	1	2	2	3	3	3	3	3	3
Semester No	II		CO2	2	3	2	2	3	3	2	3	3	3	3	2
Teacher Name	Mr. Sagar Bawake		CO3	3	3	2	2	3	2	3	3	3	2	3	
Course Outcomes			CO4	2	2	3	3	2	3	2	2	3	3	2	2
	CO1	Students will able to learn various enzymes, various minor and major equipments used in molecular biology.	CO5	3	2	1	1	3	2	2	2	3	3	2	2
	CO2	Understands the DNA structure, genome packaging, DNA replication, DNA damage.	Average	2.60	2.60	2.20	1.80	2.60	2.40	2.40	2.60	3.00	3.00	2.40	2.40
	CO3	Able to understand Gene structure, Transcription, translation and chaperon etc.													
	CO4	Understands the gene regulation as well as transposable elements in plants.													
	CO5	Able to learn genomics and proteomics with human genome projects.													

Class		M.Sc. I	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40213			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOU123: Botany Theory Paper III- Biochemistry		CO1	2	3	2	3	2	2	2	2	2	2	2	3
Semester No	II		CO2	2	2	2	2	2	3	2	3	2	3	2	2
Teacher Name	Dr. Prasad Y. Lamrood		CO3	3	2	3	2	2	2	2	2	2	2	3	2
Course Outcomes			CO4	2	2	2	2	3	2	2	2	2	2	2	2

	CO1	Students will get to know about fundamental aspects	CO5	2	2	2	2	3	2	2	2	2	2	2	2
	CO2	They will also get introduced to carbohydrates, lipid, nucleic acid biochemistry	Average	2.20	2.20	2.20	2.20	2.40	2.20	2.00	2.20	2.00	2.20	2.20	2.20
	CO3	Students will learn about Protein biochemistry													
	CO4	Students will learn about enzymology and nitrogen metabolism													
	CO5	Primary, secondary metabolites, extraction, synthesis pthways will be studies.													

Class	<u>M.Sc. I</u>	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40214 P		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BODT 124 : Botany Theory Paper -IV Mushroom Cultivation and Biopesticide	CO1	3	3	3	3	3	3	3	3	3	3	3	2
Semester No	<u>II</u>	CO2	3	3	3	3	3	3	3	3	3	3	3	3
Teacher Name	Prof. A.A.Kulkarni	CO3	3	3	3	3	3	3	3	3	3	3	3	3
Course Outcomes		CO4	3	3	3	2	3	2	3	2	3	3	3	3
	CO1	Students will get the knowledge of different types of mushrooms and its nutritional value	CO5	3	3	3	3	3	3	3	3	3	3	3
	CO2	Students will learn various methods of preparation of spawn (seed) of various mushrooms	Average	3.00	3.00	3.00	2.80	3.00	2.80	3.00	2.80	3.00	3.00	2.80
	CO3	Students will get aquinted with the production technology of variuos mushrooms												
	CO4	Students will get the knowlege of different types of biopesticides												
	CO5	Commercialization of Biopesticides												

Class	<u>M.Sc. I</u>	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40214 T (B)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BODT 124 : Practical Paper -IV Mushroom Cultivation and Biopesticide	CO1	3	3	3	3	3	3	3	3	3	3	3	3

Semester No	II	CO2	3	3	3	3	3	3	3	3	3	3	3	3
Teacher Name	Prof. A.A.Kulkarni	CO3	3	3	3	3	3	3	3	3	2	3	2	3
Course Outcomes		CO4	3	3	3	2	3	3	3	3	3	2	3	2
	CO1	Students will get the practical knowledge of different types of mushrooms and its nutritional value	CO5	3	3	3	3	3	2	3	3	3	3	3
	CO2	Students will get hands on training on various methods of preparation of spawn (seed) of various mushrooms	Average	3.00	3.00	3.00	2.80	3.00	2.80	3.00	3.00	2.80	2.80	2.80
	CO3	Students will individually perform the production technology of various mushrooms												
	CO4	Students will get practical knowledge of different types of biopesticides												
	CO5	Learn methods Commercialization of Biopesticides by visiting Biopesticide industry												

Class	M.Sc. I	Course Outcomes	Program Outcomes									PSOs			
Subject Code	40215		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3	
Subject Name	BOUP :125 Practical Based on BOUT 121,122 &123	CO1	3	1	3	3	3	3	2	3	2	3	2	3	
Semester No	II	CO2	2	2	3	2	3	3	3	1	1	2	2	2	
Teacher Name	Dr. P.Y.Lamrood. Mr. Sagar Bawake, Dr. Nisha Godse	CO3	2	3	2	3	2	3	1	2	2	2	2	3	
Course Outcomes		CO4	3	1	3	3	3	3	2	3	2	2	3	3	
	CO1	students will understand the basic techniques of genetic experiments	CO5	3	3	2	3	2	3	3	2	3	2	3	
	CO2	Checking Effect of temperature and alkali on absorption of DNA: hyperchromicity	Average	2.60	2.00	2.60	2.80	2.60	3.00	2.20	2.20	2.00	2.40	2.20	2.80
	CO3	Hands on training on SDS PAGE to separate seed storage protein, Isolation, estimation, dialysis, separation of proteins is what they will learn													
	CO4	Students will learn the basic practicals of karyotypes													
	CO5	Students will learn to make different solutions, TLC, Spectrophotometric analysis													

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Class		M.Sc. II	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40321			PO1	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOUT 231: Computational Botany		CO1	3	2	3	3	3	3	3	3	3	3	3	3
Semester No	III		CO2	2	3	2	2	2	2	2	2	2	2	2	2
Teacher Name	Prof. A.A.Kulkarni & Dr. Prasad Y. Lamrood		CO3	3	3	3	3	3	3	3	3	3	3	3	3
Course Outcomes			CO4	3	3	3	3	3	3	3	3	3	3	3	3
	CO1	Students will understand the concept of statistics and its use in biology	CO5	3	2.80	3	3	3	3	3	3	3	3	3	3
	CO2	Students will learn various statistical tests using Statistics using R, SPSS and Excel	Average	2.80	2.76	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
	CO3	Students will learn various methods of scientific writing													
	CO4	Students will understand the concept of Scientific communication and its use in writing review article ,thesis etc.													
	CO5	Students will get the knowledge of various analytical methods and its use in biology													

Class		M.Sc. II	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40322			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOUT 232 Developmental Botany		CO1	2	3	2	2	2	2	2	2	2	3	3	3
Semester No	III		CO2	2	2	2	2	3	2	3	2	2	2	1	2
Teacher Name	Dr. Prasad Y. Lamrood		CO3	3	2	3	2	2	2	2	2	3	3	3	1
Course Outcomes			CO4	2	2	2	2	2	2	2	2	2	1	2	3
	CO1	Students will learn basic processes involved in Development	CO5	3	2	3	2	2	2	2	2	3	3	3	1
	CO2	They will also learn about development of embryo, endosperm,	Average	2.40	2.20	2.40	2.00	2.20	2.00	2.20	2.00	2.40	2.40	2.40	2.00
	CO3	They will also learn about development and deviation from normal embryogenesis													

CO4	Students will get to know about physiological aspects of vegetative plant development
CO5	Students will get to know about molecular aspects of reproductive plant development

Class		M.Sc. II	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40323			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOUT 233 :Plant Physiology		CO1	3	2	3	3	3	2	3	3	3	3	3	
Semester No	III		CO2	3	3	3	3	3	3	3	3	3	3	3	
Teacher Name	Mr. Sagar Bawake		CO3	3	3	3	3	3	2	3	3	2	2	3	
Course Outcomes			CO4	2	3	3	3	2	3	3	2	3	2	3	
CO1	Students will understands the Soil formation, its types, its role in plant life, role of water.		CO5	3	2	3	3	2	2	3	3	2	2	3	
CO2	Able to understands various parts of photosynthesis, C3, C4 and CAM pathways.		Average	2.80	2.60	3.00	3.00	2.60	2.40	3.00	2.80	2.60	2.40	3.00	
CO3	Able to learns about Respiration process and lipid ,mechanism in plants.														
CO4	Able to understands solute transport in plants, seed dormancy, physiology of flowering.														
CO5	Able to learns about the stress physiology, plant growth regulators and secondary metabolites pathways.														

Class		MScII	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40324 D			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOTD 234 Plant Biotechnology		CO1	2	1	2	3	2	2	1	3	2	1	3	
Semester No	III		CO2	2	3	1	1	3	2	3	2	3	2	1	
Teacher Name	Prof. A.A. Kulkarni & Dr. Sudhir Bale		CO3	2	2	2	1	2	1	2	1	2	2	3	
Course Outcomes			CO4	3	3	3	3	3	3	3	3	3	3	3	
CO1	Ability to understand concepts of Plant Genetic Engineering- Gene constructs, A typical Plant gene, Promoters/ Enhancers, reporter genes		CO5	3	3	3	3	3	3	3	3	3	3	3	
CO2	Ability to understand a detailed account of different vectors used in plant genetic engineering		Average	2.40	2.40	2.20	2.20	2.60	2.20	2.40	2.40	2.60	2.20	2.40	
CO3	Ability to understand Agrobacterium mediated gene transfer and applications of Genetic engineering														
CO4	Students will learn about the Scope and Importance and different methods of plant tissue culture														

CO5	Students will learn about different methods measurement of pollution and pollution management
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Class		M.Sc. II	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40325			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BODP 234 Practical Based on BODT 234		CO1	3	3	3	3	3	3	3	3	3	3	3	
Semester No	III		CO2	3	3	3	3	3	3	3	3	3	3	3	
Teacher Name	Prof. A.A.Kulkarni		CO3	3	3	3	3	3	3	3	3	3	3	3	
Course Outcomes			CO4	3	3	3	3	3	3	3	3	3	3	3	
CO1	Hands on experience of Isolation and separation of genomic DNA			3	3	3	3	3	3	3	3	3	3	3	
CO2	Isolation and screening of protoplasts			3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
CO3	Physico chemical properties of waste water														
CO4	Students will get the information about various transgenic plants														
CO5	Students will visit various research institutes, Tissue culture lab, Waste water treatment plant														

Class		M.Sc. II	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40326			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOUP 235 based on BOUT 231, 232 & 233		CO1	3	2	3	3	3	2	3	3	3	3	3	
Semester No	III		CO2	3	3	3	3	3	3	3	3	3	3	3	
Teacher Name	Dr. Prasad Lamrood, Mr. Sagar Bawake & Dr. Nisha Godse		CO3	3	3	3	3	3	2	3	3	2	2	3	
Course Outcomes			CO4	2	3	3	3	2	3	3	2	3	2	3	
CO1	Students will learn to perform various statistical tests using R, Excel and SPSS		CO5	3	2	3	3	2	2	3	3	2	2	3	
CO2	Hands on training on Preparation of standard solutions(% , ppm, molar, normal)., Able to understands the essential elements deficiency symptoms in plants, transpiration in plants, Hands on training on TAN from C4, amylase enzyme activity, prolin estimation.		Average	2.80	2.60	3.00	3.00	2.60	2.40	3.00	2.80	2.60	2.40	3.00	
CO3	Hands on training on detection of amino acids/sugars from the phloem sap using paper chromatography.														
CO4	Able to isolate and estimate chl-a and chl-b from C3&C4 plants, Soluble protein from seeds by lowery and bradford methods.														

CO5	students will learn to perform various slides of microsporogenesis and megasporogenesis
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Class		M.Sc.II	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40421			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOUT 241 (Botany Theory Paper I- Botanical Techniques)		CO1	3	3	3	3	3	3	3	3	3	3	3	3
Semester No	IV		CO2	2	2	2	2	2	1	3	2	2	2	1	2
Teacher Name	Dr.P.Y. Lamrood (Credit I and III) S.R.Bale (Credit II & IV)		CO3	3	3	3	3	3	3	3	3	3	3	3	3
Course Outcomes			CO4	2	3	2	3	3	3	2	2	2	2	2	3
	CO1	Students will learn about basics of microscopy and various microscopic techniques	CO5	2	3	2	3	2	1	1	2	3	1	2	1
	CO2	They will also learn about basics of spectroscopy, principle and various spectroscopic techniques		2.40	2.80	2.40	2.80	2.60	2.20	2.40	2.40	2.60	2.20	2.20	2.40
	CO3	Ability to understand various chromatographic techniques like Paper, TLC, Column chromatography, GC, HPLC	CO5												
	CO4	Ability to understand electrophoretic techniques like native PAGE, SDS PAGE, agarose gel electrophoresis, isoelectric focussing, 2D electrophoresis	Average												
	CO5	Ability to understand centrifugation technique, immunological techniques & electrochemical techniques													

Class		M.Sc. II	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40422			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOUT 242: Advanced Plant Ecology		CO1	3	3	3	3	2	2	2	2	2	3	3	2
Semester No	IV		CO2	2	2	2	2	2	2	2	2	3	2	2	2
Teacher Name	Dr.Nisha Godse & Mr. Sagar Bawake		CO3	3	3	3	3	2	2	2	2	2	3	3	2
Course Outcomes			CO4	2	3	3	3	2	3	3	2	3	2	3	3
	CO1	Students will comprehend the core concepts of plant ecology and their interaction with environment.	CO5	3	2	3	3	2	2	3	3	2	2	3	3
	CO2	Ability to understand the environmental issues and their control measures		2.60	2.60	2.80	2.80	2.00	2.20	2.40	2.20	2.40	2.40	2.80	2.40
	CO3	Students will understand the ecophysiology, Plants interaction, Environmental ethics and restoration ecology.													
	CO4	They will be able to understand various environmental laws in India.													

	CO5	They will able to understands Environmental Impact Assessment,Procedure for reviewing EIA,Human impact on ecosystem & Bio-indicators of environmental degradation.
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Class		M.Sc. II	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40423 D			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BODT 243 : Industrial Biotechnology		CO1	3	3	3	3	3	3	3	3	3	3	3	
Semester No	IV		CO2	3	3	3	3	3	3	3	3	3	3	3	
Teacher Name	Prof. A.A.Kulkarni		CO3	3	3	3	3	3	3	3	3	3	3	3	
Course Outcomes			CO4	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
	CO1	Students will learn about the scope and importance of Industrial biotechnology	CO5	3	3	3	3	3	3	3	3	3	3	3	
	CO2	Stuednts will get the knowledge of ferenation technology and production of various products		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
	CO3	Students will learn about enzymes and Biosensors and its applications													
	CO4	Scope and importance of Bioremediation													
	CO5	Scope and importance and production of Bioplastics													

Class		M.Sc. II	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40425 B			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BODT 244 b: Herbal Technology		CO1	2	2	2	2	2	2	2	2	2	2	2	
Semester No	IV		CO2	2	3	2	3	2	3	2	3	2	3	2	
Teacher Name	Prof. B.M.Gaykar		CO3	3	2	3	1	2	1	2	3	2	3	2	
Course Outcomes			CO4	2	3	2	3	2	3	2	3	2	3	2	
	CO1	understand raw material as source of herbal drugs from cultivation to herbal drug product	CO5	3	2	3	1	2	1	2	3	2	3	2	
	CO2	know the WHO and ICH guidelines for evaluation of herbal drugs		2.40	2.40	2.40	2.00	2.00	2.00	2.00	2.80	2.00	2.80	2.00	
	CO3	know the herbal cosmetics, natural sweeteners, nutraceuticals													
	CO4	appreciate patenting of herbal drugs,													
	CO5	GMP													

Class		M.Sc. II	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40525 B			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3

Subject Name	Practical Based on BODT 243 : Industrial Biotechnology	CO1	3	3	3	3	3	3	3	3	3	3	3	3
Semester No	IV	CO2	3	3	3	3	3	3	3	3	3	3	3	3
Teacher Name	Prof. A.A.Kulkarni	CO3	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Course Outcomes		CO4	3	3	2	3	2	2	3	2	3	2	3	2
CO1	Hands on experience of isolation of Soil organism and its use in fermentation	CO5	3	3	3	3	3	3	3	3	3	3	3	3
CO2	Hands on training of use of spectrophotometer in estimation of citric acid		3.00	3.00	2.60	3.00	2.80	2.80	3.00	2.80	3.00	2.80	3.00	2.80
CO3	Practical on Alcohol production													
CO4	Demonstration of Biosensors and Biochip													
CO5	Visit to Industry related to fermentation and various products													

Class	M.Sc.II	Course Outcomes	Program Outcomes									PSOs		
Subject Code	40426		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
Subject Name	BOUP 245 based on BOUT 241 and BOUT 242	CO1	3.00	3.00	2.00	2.00	3.00	3.00	2.00	3.00	1.00	2.00	3.00	3.00
Semester No	IV	CO2	2	2	3	3	2	2	3	2	2	3	2	3
Teacher Name	Dr.P.Y. Lamrood & Dr. Nisha Godse	CO3	3	2	3	3	2	3	2	3	3	2	2	2
Course Outcomes		CO4	2	3	3	2	3	3	3	2	2	3	3	2
CO1	Students will learn basic techniques like micrometry, microtomy, maceration technique	CO5	2	2	2	2	2	2	2	2	2	2	2	2
CO2	They will learn to measure pH, electrical conductivity, Chromatographic techniques	Average	2.40	2.40	2.60	2.40	2.40	2.60	2.40	2.40	2.00	2.40	2.40	2.40
CO3	Immunological, enzyme related and cytochemical techniques will also be acquired													
CO4	Database searching, retriving, sequence alignment will also be taught													
CO5	Students will learn basic techniques of soil and water													

CO-PO Mapping

		Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	
FY	FY	1	40111	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
		2	40112	2.60	2.60	2.00	2.20	2.40	2.20	2.40	2.40	2.80
		3	40113	1.80	1.80	2.00	1.80	2.20	2.00	1.80	2.00	2.20
		4	40114P	3.00	3.00	3.00	3.00	3.00	2.67	3.00	2.67	2.67
		5	40114 T (B)	3.00	3.00	3.00	3.00	3.00	2.67	3.00	2.67	2.67
		6	40115	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
		7	40211	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
		8	40212	2.60	2.60	2.20	1.80	2.60	2.40	2.40	2.60	3.00
		9	40213	2.20	2.20	2.20	2.20	2.40	2.20	2.00	2.20	2.00
		10	40214 P	3.00	3.00	3.00	2.80	3.00	2.80	3.00	2.80	3.00
		11	40214 T (B)	3.00	3.00	3.00	2.80	3.00	2.80	3.00	3.00	2.80
		12	40215	2.60	2.00	2.60	2.80	2.60	3.00	2.20	2.20	2.00
SY	SY	1	40321	2.80	2.76	2.80	2.80	2.80	2.80	2.80	2.80	2.80
		2	40322	2.40	2.20	2.40	2.00	2.20	2.00	2.20	2.00	2.40
		3	40323	2.80	2.60	3.00	3.00	2.60	2.40	3.00	2.80	2.60
		4	40324 D	2.40	2.40	2.20	2.20	2.60	2.20	2.40	2.40	2.60
		5	40325	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
		6	40326	2.80	2.60	3.00	3.00	2.60	2.40	3.00	2.80	2.60
		7	40421	2.40	2.80	2.40	2.80	2.60	2.20	2.40	2.40	2.60
		8	40422	2.60	2.60	2.80	2.80	2.00	2.20	2.40	2.20	2.40
		9	40423 D	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
		10	40425 B	2.40	2.40	2.40	2.00	2.00	2.00	2.00	2.80	2.00
		11	40525 B	3.00	3.00	2.60	3.00	2.80	2.80	3.00	2.80	3.00
		12	40426	2.40	2.40	2.60	2.40	2.40	2.60	2.40	2.40	2.00

CO-PO ATTAINMENT

Percentage CO-PO ATTAINMENT

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
1.573333	1.573333	1.573333	1.573333333	1.573333	1.573333	1.573333	1.573333	1.573333
1.352	1.352	1.04	1.144	1.248	1.144	1.248	1.248	1.456
1.416	1.416	1.573333	1.416	1.730667	1.573333	1.416	1.573333	1.730667
3	3	3	3	3	2.666667	3	2.666667	2.666667
3	3	3	3	3	2.666667	3	2.666667	2.666667
2	2	2	2	2	2	2	2	2
1.573333	1.573333	1.573333	1.573333333	1.573333	1.573333	1.573333	1.573333	1.573333
1.352	1.352	1.144	0.936	1.352	1.248	1.248	1.352	1.56
1.144	1.144	1.144	1.144	1.248	1.144	1.04	1.144	1.04
2.36	2.36	2.36	2.202666667	2.36	2.202667	2.36	2.202667	2.36
2.36	2.36	2.36	2.202666667	2.36	2.202667	2.36	2.36	2.202667
2.6	2	2.6	2.8	2.6	3	2.2	2.2	2
1.456	1.4352	1.456	1.456	1.456	1.456	1.456	1.456	1.456
2.016	1.848	2.016	1.68	1.848	1.68	1.848	1.68	2.016
1.456	1.352	1.56	1.56	1.352	1.248	1.56	1.456	1.352
2.4	2.4	2.2	2.2	2.6	2.2	2.4	2.4	2.6
3	3	3	3	3	3	3	3	3
2.8	2.6	3	3	2.6	2.4	3	2.8	2.6
1.248	1.456	1.248	1.456	1.352	1.144	1.248	1.248	1.352
2.6	2.6	2.8	2.8	2	2.2	2.4	2.2	2.4
1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56
2.4	2.4	2.4	2	2	2	2	2.8	2
3	3	2.6	3	2.8	2.8	3	2.8	3
2.4	2.4	2.6	2.4	2.4	2.6	2.4	2.4	2

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
78.66667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667
52	52	52	52	52	52	52	52	52
78.66667	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
78.66667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667
52	52	52	52	52	52	52	52	52
52	52	52	52	52	52	52	52	52
78.66667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667	78.66667
78.66667	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
52	52	52	52	52	52	52	52	52
84	84	84	84	84	84	84	84	84
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
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

CO-PSO MAPPING

	Course	PSO1	PSO2	PSO3
1	40111	2.00	2.00	2.00
2	40112	3.00	3.00	3.00
3	40113	2.20	2.00	1.40
4	40114P	3.00	3.00	3.00
5	40114 T (B)	3.00	3.00	3.00
6	40115	2.00	2.00	2.00
7	40211	2.00	2.00	2.00
8	40212	3.00	2.40	2.40
9	40213	2.20	2.20	2.20
10	40214 P	3.00	3.00	2.80
11	40214 T (B)	2.80	2.80	2.80
12	40215	2.40	2.20	2.80
1	40321	2.80	2.80	2.80
2	40322	2.40	2.40	2.00
3	40323	2.40	3.00	3.00
4	40324 D	2.20	2.40	2.60
5	40325	3.00	3.00	3.00
6	40326	2.40	3.00	3.00
7	40421	2.20	2.20	2.40
8	40422	2.40	2.80	2.40
9	40423 D	3.00	3.00	3.00
10	40425 B	2.00	2.80	2.00
11	40525 B	2.80	3.00	2.80
12	40426	2.40	2.40	2.40

CO-PSO ATTAINMENT

	Course	PSO1	PSO2	PSO3
	40111	1.573333	1.573333	1.573333
	40112	1.56	1.56	1.56
	40113	1.730667	1.573333	1.101333
	40114P	3	3	3
	40114 T (B)	3	3	3
	40115	2	2	2
	40211	1.573333	1.573333	1.573333
	40212	1.56	1.248	1.248
	40213	1.144	1.144	1.144
	40214 P	2.36	2.36	2.202667
	40214 T (B)	2.202667	2.202667	2.202667
	40215	2.4	2.2	2.8
	40321	1.456	1.456	1.456
	40322	2.016	2.016	1.68
	40323	1.248	1.56	1.56
	40324 D	2.2	2.4	2.6
	40325	3	3	3
	40326	2.4	3	3
	40421	1.144	1.144	1.248
	40422	2.4	2.8	2.4
	40423 D	1.56	1.56	1.56
	40425 B	2	2.8	2
	40525 B	2.8	3	2.8
	40426	2.4	2.4	2.4

Percentage CO-PSO ATTAINMENT

	Course	PSO1	PSO2	PSO3
	40111	78.66667	78.66667	78.66667
	40112	52	52	52
	40113	78.66667	78.66667	78.66667
	40114P	100	100	100
	40114 T (B)	100	100	100
	40115	100	100	100
	40211	78.66667	78.66667	78.66667
	40212	52	52	52
	40213	52	52	52
	40214 P	78.66667	78.66667	78.66667
	40214 T (B)	78.66667	78.66667	78.66667
	40215	100	100	100
	40321	52	52	52
	40322	84	84	84
	40323	52	52	52
	40324 D	100	100	100
	40325	100	100	100
	40326	100	100	100
	40421	52	52	52
	40422	100	100	100
	40423 D	52	52	52
	40425 B	100	100	100
	40525 B	100	100	100
	40426	100	100	100

FY

SY