MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8

A College with Potential for Excellence

NAAC Accredited & ISO 9001: 2015 Certified

DEPARTMENT OF BOTANY

PROGRAMME REGISTER

2023-2026

INDEX

PROGRAMME OUTCOMES (POs)

2023-2026

At the end of the programme students will have:

PO1: Essential Knowledge:

Comprehensive discipline knowledge and understanding, the ability to engage with different schools of thought and to apply their knowledge in practice including in multidisciplinary or multi professional contexts.

PO2: Creative and critical thinking and problem solving abilities:

Be effective problem solvers, able to apply critical and evidence-based thinking to conceive innovative responses to future challenges.

PO3: Teamwork and communication skills:

Be able to convey ideas and information effectively to a range of audiences for a variety of purposes and contribute in a positive and collaborative manner to achieving common goals.

PO4: Motivation and preparation in life-long learning:

Exhibit life-long skills; broad based multiple career oriented general skills; self and field based learning skills; digital skills; social responsibility and compassionate commitment; preparedness for living, learning and working in any environment

PO5: Professionalism and leadership readiness:

Be able to engage in professional behaviour and have the potential to be entrepreneurial and take leadership roles in their chosen occupations and communities.

PO6: Intercultural and ethical competency:

Be responsible and effective global citizens whose personal values and practices are consistent with their roles as responsible members of society.

PO7: Self-awareness and emotional intelligence:

Be self-aware and reflective, flexible and resilient and act with integrity and take responsibility for their actions as empowered women.

PO8: Social responsibility:

Be sensitive to and demonstrate agency in matters of environment, gender and other social issues to promote an equitable society.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

2023-2026

At the end of the programme students will be able to:

PSO1: Summarize the concepts, principles, classifications, theories and mechanisms.

PSO2: Discuss hypothesis, procedures, results and draw conclusions.

PSO3: Apply tools and techniques in solving problems, sample analysis and production.

PSO4: Develop communicative competence, creative and critical thinking, practical, technical and employability skills, social sensibility and responsibility.

Course Outcomes (COs)

2023-2026

S.no.	Semester	Course code	Course Title	Course Outcomes (COs)
1.	I	23SCCCCB14	Introduction to Classical Biology	**CO1:**Learn the principles of classification and preservation of biodiversity.
				CO2: Understand the plant anatomical, physiological and reproductive processes.
				CO3: Knowledge on animal classification, physiology, embryonic development and their economic importance.
				CO4: Outline the cell components, cell processes like cell division, heredity and molecular processes.
				CO5: Comprehend the chemical principles in shaping and driving the macromolecules and life processes.
2.	I	23SCCCAB14	Introduction to Applied Biology	**CO1:**Learn the history, ultrastructure, diversity and importance of microorganisms.
				CO2: Understand the structure and functions of macromolecules.
				CO3: Knowledge on biotechnology principles and its applications in food and medicine.
				CO4: Outline the techniques, tools and their uses in diagnosis and therapy.
				CO5: Demonstrate the bioinformatics and statistical tools in comprehending the complex biological data.
3	II	23BTCCNV23	Non-Vascular Plants	**CO1:** Compile the general characteristics of algae and their significance in nature.

				CO2: Compare and contrast the characteristics of different groups of algae.
				CO3: Summarize the important features of fungi and their economic value
				CO4: Distinguish the characteristics of different groups of fungi
				CO5: Elaborate the features and significance of amphibians of plant kingdom.
4	II	23BTP1NV21	Non-Vascular Plants – Practical	**CO1:** Identify some algal and fungal species based on the structure of thalli and reproductive organs.
				CO2: Decipher the lichens and Bryophytes based on morphological, anatomical and reproductive features.
				CO3: Demonstrate experimental skills to accurately record, analyze experimental data, and determine the respective physical parameters.
5	II	23BTCCOD23	Origin of Life & Diversity of Microbes	**CO1**: Illustrate diversity of viruses, multiplication and economic value.
				CO2: Discuss the general characteristics, classification and economic importance of special groups of bacteria.
				CO3: Explain the structure, nutrition, reproduction and significance of eubacteria.
				CO4: Evaluate the interactions among soil microbes.
				CO5: Compile the value and applications of microbes in agriculture.
6	II	23BTP2OD21	Origin of Life & Diversity of	**CO1**: Demonstrate proficiency in operating and maintaining essential

			Microbes - Practical	microbiology laboratory instruments, ensuring accurate and safe experimental procedures.
				CO2: Analyze viruses such as Gemini and TMV through electron micrographs or models.
				CO3: Master the Gram staining technique for bacteria identification, enhancing skills in microbial morphology observation and classification.
7	III	23BTCCVP33	Vascular Plants	**CO1:** Infer the evolution of vasculature, heterospory and seed habit in Pteridophytes.
				CO2: Illustrate the general characteristics of Gymnosperms along with their uses
				CO3: Discuss about some Taxonomic aids and their applications in plant systematics.
				CO4: Compare and contrast the vegetative and floral characteristics of some angio spermic families
				CO5: Evaluate the economic value of plant species from the families under the study.
8	III	23BTP3VP31	Vascular Plants - Practical	**CO1**: Distinguish the Pteridophytes and Gymnosperms based on their morphological, anatomical and reproductive structures.
				CO2: Make systematic classification of plant species using vegetative and floral characters.
				CO3: Identify angiosperm plant species and make herbarium specimens.
9	III	23BTCCPD33	Plant Pathology & Plant Diseases	**CO1:** Identify major groups of plant pathogens and classify plant diseases.

				CO2: Explain various stages in infection, plant pathogenesis and responsible factors.
				CO3: Elaborate the preventive and control measures for plant diseases.
				CO4: Discuss about some diseases of field crops and their management.
				CO5: Discuss about some diseases of horticultural crops and their management.
10	III	**23BTP4PD31**	Plant Pathology & Plant Diseases - Practical	**CO1:** Handle equipment and instruments in plant pathology laboratory.
				CO2: Isolate plant pathogenic microbes.
				CO3: Identify the plant diseases based on histopathological observations.
11	III	23BTCCPB33	Plant Breeding	**CO1:** Compare and contrast the methods of reproduction and also pollination mechanisms.
				CO2: Design appropriate pollination method for a given crop plant.
				CO3: Recommend the best possible breeding method for a crop species.
				CO4: Propose the steps for production of hybrid varieties of crop plants.
				CO5: Apply molecular techniques to develop a tailored plant variety.
12	III	23BTP5PB31	Plant Breeding - Practical	**CO1:** Distinguish self and cross-pollinated plant species based on floral biology.
				CO2: Perform skills related to self and cross pollination in plants.
				CO3: Make hybridization to produce new varieties.
13	III	23BTCCPT33	Plant Biotechnology	**CO1:** Explain the scientific techniques and tools used in plant tissue culture laboratories.

				CO2: Appraise the applications of plant tissue culture in agriculture and horticulture sectors.
				CO3: Acquire skills related to various aspects in plant tissue culture.
				CO4: Evaluate the role of transgenic plants in solving certain plant related beneficiary issues.
				CO5: Justify the role of plant biotechnology in bioenergy and phytoremediation and Judge the biosafety and bioethics related to plant biotechnology.
14	III	23BTP6PT31	Plant Biotechnology – Practical	**CO1:** Operate all the equipment and instruments in a plant tissue culture laboratory.
				CO2: Establish callus and organ culture.
				CO3: Obtain quality plants using micropropagation techniques.
15	IV	23BTCCAE43	Anatomy & Embryology of Angiosperms	**CO1:**Categorize various tissues and evaluate their role in plants.
				CO2: Explain anomalous secondary growth in some plants and justify the value of timber plants
				CO3: Summarize the events in microsporogenesis and development of male gametophyte.
				CO4: Discuss the events in megasporogenesis and development of female gametophyte.
				CO5: Propose the incidents in embryogenesis of an angiospermic plant species.
16	IV	23BTP7AE41	Anatomy & Embryology of Angiosperms –Practical	**CO1:** Conduct dissections of various plant organs and study the internal structures by staining.

				CO2: Look into the embryological characteristics from sex organs to seeds in angiosperms.
				CO3: Identify the seed borne pathogens and prescribe methods to prevent or control them.
17	IV	23BTCCPP43	Plant Ecology Biodiversity & Phytogeography	**CO1:** Explain the interactions among the biotic and abiotic components in an ecosystem.
				CO2: Summarize the characteristics of a population and a community.
				CO3: Anticipate the environmental problems arising due to climate change
				CO4: Assess the value of biodiversity and choose appropriate conservation strategy.
				CO5: Make a survey on the distribution of various plant groups in a specified geographical area.
18	IV	23BTP8PP41	Plant Ecology Biodiversity & Phytogeography – Practical	**CO1:** Handle instruments used in ecological studies.
				CO2: Perform experiments and collect data on autecology and synecology.
				CO3: Identify various plant groups based on their morphological and anatomical adaptations.
19	IV	23BTCCPU43	Plant Resources & Utilization	**CO1:** Explain the significance of plants in human nutrition.
				CO2: List out different plant products used by human beings.
				CO3: Evaluate the commercial plant products and their utilization
				CO4: Discuss the uses of medicinal and aromatic plants for human health care.
				CO5: Appraise the importance of timber and non-timber products for value added products.

20	IV	23BTP9PU41	Plant Resources & Utilization– Practical	**CO1:** Characterize various plant products based on morphological and microscopic observations.
				CO2: Identify economically valuable plants and their products.
				CO3: Categorize distinct plant products utilized by humans.
21.	V	23BTCCCG53	Cell Biology & genetics	**CO1:** Sketch the ultra-structural aspects of plant cell and its components
				CO2: Hypothesise the role of chromosomes in inheritance
				CO3: Justify the role of genes in inheritance of characters by descent
				CO4: Correlate the functions of the nucleic acid with their structure.
				CO5: Explain the discoveries that led to understanding the fine structure of a gene.
22	V	23BTP10CG51	Cell Biology & Genetics –Practical	**CO1:** Identify the stages of mitotic and meiotic cell divisions.
				CO2: Infer the structure and functions of nucleic acids.
				CO3: Predict the consequences of a particular genetic condition
23.	V	23BTCCPM53	Plant Physiology & Metabolism	**CO1:**Comprehend the importance of water in plant life and mechanisms for transport of water and solutes in plants.
				CO2: Explain the role of minerals in plant nutrition and their deficiency symptoms.Interpret the role of enzymes in plant metabolism.
				CO3: Hypothesise the light reactions and carbon assimilation processes responsible for synthesis of food in plants.

				CO4: Analyze the biochemical reactions in relation to Nitrogen and lipid metabolisms
				CO5: Evaluate the physiological factors that regulate growth, development and flowering in plants.
24	V	23BTP11PM51	Plant Physiology & Metabolism - Practical	**CO1:**. Conduct lab and field experiments pertaining to plant physiology
				CO2: Estimate the quantities and qualitative expressions using experimental results and calculations
				CO3: Interpret the factors responsible for growth and development in plants.
25	V	23BTEC11OF53	Organic Farming	**CO1:** Compare and contrast the advantages and disadvantages of conventional and organic farming. Acquire skills on different composting methods.
				CO2: Acquainted with cultural and crop protection practices related to organic farming.
				CO3: Acquire knowledge on various management practices in organic farming.
				CO4: Discuss about the certification and marketing of organic foods
				CO5: Explain the initiatives of government in promoting organic farming
26	V	23BTP1211OF51	Organic Farming - Practical	**CO1:** Prepare different organic formulations for organic farming.
				CO2: Design a vermicompost unit and prepare the compost.
				CO3: Identify various manures for organic farming.

27.	V	23BTEC12ST53	Seed Technology	**CO1:** Explain the causes for seed dormancy and methods to break dormancy.
				CO2: Understand critical concepts of seed processing and seed storage procedures
				CO3: Acquire skills related to various seed testing methods.
				CO4: Identify seed borne pathogens and prescribe methods to control them.
				CO5: Understand the legislations on seed production and procedure of seed certification.
28	V	23BTP1312ST51	Seed Technology - Practical	**CO1:** Break the seed dormancy using various techniques.
				CO2: Determine seed moisture, seed germination percentage, seed viability and vigour
				CO3: Identify the seed borne pathogens and prescribe methods to prevent or control them
29	**V**	23BTEC21MC53	Mushroom Culture Technology	**CO1:**Understand the structure and life of a mushroom and discriminate between edible and poisonous mushrooms.
				CO2: Identify the basic infrastructure to establish a mushroom culture unit.
				CO3: Demonstrate skills preparation of compost and spawn.
				CO4: Acquire critical knowledge on cultivation of some edible mushrooms.
				CO5: Explain the methods of storage, preparation of value-added products and marketing.
30	**V**	23BTP1421MC51	Mushroom Culture Technology - Practical	**CO1:**Identify and discriminate different mushrooms based on morphology
				CO2: Understand facilities required for mushroom cultivation.

				CO3: Demonstrate skills on preparation of spawn, compost and casing material
31	**V**	23BTEC22PP53	Plant Propagation Techniques	**CO1:**Explain various plant propagation structures and their utilization
				CO2: Understand advantages and disadvantages of vegetative, asexual and sexual plant propagation methods.
				CO3: Assess the benefits of asexual propagation of certain economically valuable plants using apomictics and adventive polyembryony.
				CO4: Demonstrate skills related to vegetative plant propagation techniques such as cuttings, layering,grafting and budding.
				CO5: Apply a specific macro-propagation technique for a given plant species
32	**V**	23BTP1522PP51	Plant Propagation Techniques - Practical	**CO1:**Make use of different plant propagation structures for plant multiplication.
				CO2: Explore the specialized organs or asexual propagules in some plants for their proliferation.
				CO3: Demonstrate skills on micropropagation of plants through vegetative propagation techniques.

Mapping of COs with PSOs and POs

S.No.	Semester	Course Code	Course Title	COs	PSOs	POs
1	I	23SCCCCB14	Introduction to Classical Biology	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
2	I	23SCCCAB14	Introduction to Applied Biology	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
3	II	23BTCCNV23	Non-Vascular Plants	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8

				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
4	II	23BTP1NV21	Non - Vascular Plants – Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
,5	II	23BTCCOD23	Origin of Life & Diversity of Microbes	CO1	PSO2, PSO3	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO4	PSO1, PSO2, PSO3,PSO4	PO1, PO2, PO3,PO4
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4,PO8
6	II	23BTP2OD21	Origin of Life & Diversity of Microbes – Practical	CO1	PSO2, PSO3,PSO4	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3,PSO4	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3,PSO4	PO1, PO2, PO3,PO4
7	III	23BTCCVP33	Vascular Plants	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO4	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4

				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
8	III	**23BTP3VP31**	Vascular Plants -Practical	CO1	PSO1,PSO2, PSO3,PSO4	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3,PSO4	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
9	III	23BTCCPD33	Plant Pathology & Plant Diseases	CO1	PSO1, PSO2, PSO3,	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
10	III	23BTP4PD31	Plant Pathology & Plant Diseases - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
11	III	23BTCCPB33	Plant Breeding	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4

				CO5	PSO1, PSO2, PSO3	PO1, PO2, PO3, PO4
12	III	23BTP5PB31	Plant Breeding-Practical	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3	PO1, PO2, PO3, PO4
13	III	23BTCCPT33	Plant Biotechnology	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
14	III	23BTP6PT31	Plant Biotechnology - Practical	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
15	IV	23BTCCAE43	Anatomy & Embryology of Angiosperms	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3
				CO2	PSO1, PSO2, PSO3	PO1, PO2, PO3
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4

				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
16	IV	23BTP7AE41	Anatomy & Embryology of Angiosperms - Practical	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3,PSO4	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
17	IV	23BTCCPP43	Plant Ecology Biodiversity & Phytogeography	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO5	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
18	IV	23BTP8PP41	Plant Ecology Biodiversity & Phytogeography - Practical	CO1	PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
19	IV	23BTCCPU43	Plant Resources & Utilization	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4

				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
20	IV	23BTP9PU41	Plant Resources & Utilization - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
21	V	23BTCCCG53	Cell Biology & Genetics	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4, PO5
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5
22	V	23BTP10CG51	Cell Biology & Genetics -Practical	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4,PO5
				CO2	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4, PO5
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5

23	V	23BTCCPM53	Plant Physiology & Metabolism	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
24	V	23BTP11PM51	Plant Physiology & Metabolism - Practical	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4,PO5
25.	V	23BTEC11OF53	Organic Farming	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
26	V	23BTP1211OF51	Organic Farming - Practical	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2,	PO1, PO2, PO3,PO4

					PSO3,PSO4	
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
27.	V	23BTEC12ST53	Seed Technology	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3,PSO4	PO1, PO2, PO3,PO4, PO5
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5
28.	V	23BTP1312ST51	Seed Technology - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4
				CO2	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4, PO5
29.	V	23BTEC21MC53	Mushroom Culture Technology	CO1	PSO1, PSO2, PSO3	PO1, PO2, PO3,PO4, PO8
				CO2	PSO1, PSO2, PSO3,PSO4	PO1, PO2, PO3,PO4, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4,PO8

				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8
30	V	23BTP1421MC51	Mushroom Culture Technology - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8
31	V	23BTEC22PP53	Plant Propagation Techniques	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8
				CO5	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8
32	V	23BTP1522PP51	Plant Propagation Techniques - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3,PO4, PO8

Mapping of Courses with PSOs

Course Title	Course Code	PSO1	PSO2	PSO3	PSO4
Introduction to Classical Biology	23SCCCCB14	✔	✔	✔	✔
Introduction to Applied Biology	23SCCCAB14	✔	✔	✔	✔
Non - Vascular Plants	23BTCCNV23	✔	✔	✔	✔
Non - Vascular Plants- Practical	23BTP1NV21	✔	✔	✔	✔
Origin of Life & Diversity of Microbes	23BTCCOD23	✔	✔	✔	✔
Origin of Life & Diversity of Microbes - Practical	23BTP2OD21	✔	✔	✔	✔
Vascular Plants	23BTCCVP33	✔	✔	✔	✔
Vascular Plants - Practical	23BTP3VP31	✔	✔	✔	✔
Plant Pathology & Plant Diseases	23BTCCPD33	✔	✔	✔	✔
Plant Pathology & Plant Diseases - Practical	23BTP4PD31	✔	✔	✔	✔
Plant Breeding	23BTCCPB33	✔	✔	✔	✔
Plant Breeding - Practical	23BTP5PB31	✔	✔	✔	✔
Plant Biotechnology	23BTCCPT33	✔	✔	✔	✔
Plant Biotechnology -Practical	23BTP6PT31	✔	✔	✔	✔
Anatomy & Embryology of Angiosperms	23BTCCAE43	✔	✔	✔	✔
Anatomy & Embryology of Angiosperms - Practical	23BTP7AE41	✔	✔	✔	✔
Plant Ecology Biodiversity & Phytogeography	23BTCCPP43	✔	✔	✔	✔
Plant Ecology Biodiversity & Phytogeography - Practical	23BTP8PP41	✔	✔	✔	✔

Plant Resources & Utilization	23BTCCPU43	✔	✔	✔	✔
Plant Resources & Utilization - Practical	23BTP9PU41	✔	✔	✔	✔
Cell Biology & Genetics	23BTCCCG53	✔	✔	✔	✔
Cell Biology & Genetics - Practical	23BTP10CG51	✔	✔	✔	✔
Plant Physiology & Metabolism	23BTCCPM53	✔	✔	✔	✔
Plant Physiology & Metabolism - Practical	23BTP11PM51	✔	✔	✔	✔
Organic Farming	23BTEC11OF53	✔	✔	✔	✔
Organic Farming - Practical	23BTP1211OF51	✔	✔	✔	✔
Seed Technology	23BTEC12ST53	✔	✔	✔	✔
Seed Technology - Practical	23BTP1312ST51	✔	✔	✔	✔
Mushroom Culture Technology	23BTEC21MC53	✔	✔	✔	✔
Mushroom Culture Technology - Practical	23BTP1421MC51	✔	✔	✔	✔
Plant Propagation Techniques	23BTEC22PP53	✔	✔	✔	✔
Plant Propagation Techniques - Practical	23BTP1522PP51	✔	✔	✔	✔

Mapping of Courses with POs

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
Introduction to Classical Biology	✔	✔	✔	✔				
Introduction to Applied Biology	✔	✔	✔	✔				
Non - Vascular Plants	✔	✔	✔	✔				✔
Non - Vascular Plants- Practical	✔	✔	✔	✔				
Origin of Life & Diversity of Microbes	✔	✔	✔	✔				✔
Origin of Life & Diversity of Microbes - Practical	✔	✔	✔	✔				
Vascular Plants	✔	✔	✔	✔				
Vascular Plants - Practical	✔	✔	✔	✔				
Plant Pathology & Plant Diseases	✔	✔	✔	✔				
Plant Pathology & Plant Diseases - Practical	✔	✔	✔	✔				
Plant Breeding	✔	✔	✔	✔				
Plant Breeding - Practical	✔	✔	✔	✔				
Plant Biotechnology	✔	✔	✔	✔				
Plant Biotechnology -Practical	✔	✔	✔	✔				
Anatomy & Embryology of Angiosperms	✔	✔	✔	✔				
Anatomy & Embryology of Angiosperms - Practical	✔	✔	✔	✔				

Plant Ecology Biodiversity & Phytogeography	✔	✔	✔	✔				
Plant Ecology Biodiversity & Phytogeography - Practical	✔	✔	✔	✔				
Plant Resources & Utilization	✔	✔	✔	✔				
Plant Resources & Utilization - Practical	✔	✔	✔	✔				
Cell Biology & Genetics	✔	✔	✔	✔	✔			
Cell Biology & Genetics - Practical	✔	✔	✔	✔	✔			
Plant Physiology & Metabolism	✔	✔	✔	✔	✔			
Plant Physiology & Metabolism - Practical	✔	✔	✔	✔	✔			
Organic Farming	✔	✔	✔	✔				
Organic Farming - Practical	✔	✔	✔	✔				
Seed Technology	✔	✔	✔	✔	✔			
Seed Technology - Practical	✔	✔	✔	✔	✔			
Mushroom Culture Technology	✔	✔	✔	✔				✔
Mushroom Culture Technology - Practical	✔	✔	✔	✔				✔
Plant Propagation Techniques	✔	✔	✔	✔				✔
Plant Propagation Techniques - -Practical	✔	✔	✔	✔				✔