# MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA A

**College with Potential for Excellence**

**NAAC Accredited & ISO 9001: 2015 Certified**

# PROGRAMME REGISTER

**2020-2023**

## DEPARTMENT OF BIOTECHNOLOGY

# INDEX

## UG PROGRAMMES OFFERED

| S.No. | Programme | Combination offered | Programme Code |
|---|---|---|---|
| 1 | B.Sc. | Biotechnology, Botany, Chemistry (BBC) | 307 |
| 2 | B.Sc. | Microbiology, Biotechnology, Chemistry (MBC) | 307 |

## PROGRAMME OUTCOMES (POs)

## 2020-2023

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 multi-disciplinary 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)

## 2020-2023

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)
# 2020-2023

| S.No. | Sem | Course Code | Course Title | Course Outcomes (COs) |
|---|---|---|---|---|
| 1 | I | 20BYCCCG13 | Introduction to Biotechnology, Cell Biology& Genetics | **CO1:**Explain the scope and applications of biotechnology and the various components of the eukaryotic cell |
| | | | | **CO2:** Outline the stages of cell cycle, cell division and apoptosis |
| | | | | **CO3:** Explain the structures and organization of chromosomes in eukaryotic cells. |
| | | | | **CO4:** Summarize gene mutations and the mechanisms of repair. |
| | | | | **CO5:** Recall the postulates of Mendel laws and the basic concept of inheritance. |
| 2 | I | 20BYP1CG12 | Cell Biology & Genetics - Practical | **CO1:** Experiment and observe the stages of Mitosis, Meiosis |
| | | | | **CO2:** Design the Karyotyping of humans and Drosophila and pedigree charts |
| | | | | **CO3:** understand the pedigree charts |
| 3 | II | 20BYCCME23 | Macromolecules & Enzymology | **CO1:** Classify carbohydrates, amino acids, lipids and proteins. |
| | | | | **CO2:** Illustrate the structures of biomolecules |
| | | | | **CO3:** Summarize the metabolism of biomolecules. |
| | | | | **CO4:** Explain the concepts of enzymology. |
| | | | | **CO5:** Discuss the quantitative and qualitative analysis of carbohydrates, proteins and amino acids. |
| 4 | II | 20BYP2ME22 | Macromolecules & Enzymology – Practical | **CO1:** Evaluate the types of biomolecules through quantitative analysis. |
| | | | | **CO2:** Demonstrate the isolation of starch and immobilization of enzymes. |
| | | | | **CO3:** understand the Genetic estimation |
| 5 | III | 20BYCCBT33 | Biophysical Techniques | **CO1:** Explain the laws, principles and applications of di instruments |
| | | | | **CO2:** Apply laws to draw inferences, using instruments. |
| | | | | **CO3:** Explain Chromatography techniques and |

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| | | | | electrophoresis |
| | | | | **CO4:** Outline the principles and applications of microscopy and spectroscopy. |
| 6 | III | 20BYP3BT32 | Biophysical Techniques Practical | **CO1:** Analyze the given biomolecule through chromatography, TLC, Centrifuge, Colorimeter and spectrophotometer. |
| | | | | **CO2:** Demonstrate the gel electrophoresis of proteins and Spectrophotometric analysis of DNA denaturation. |
| | | | | **CO3:** Evaluate the titration mixtures of strong and weak acids. |
| 7 | IV | 20BYCCIT43 | Immunology & Immunotechnology | **CO1:** Classify and explain the types of antigen-antibody and hypersensitivity reactions. |
| | | | | **CO2:** Discuss the mechanism, manifestations of clinical transplantations and autoimmune deficiency diseases. |
| | | | | **CO3:** Enumerate the types of tumour antigens and explain cancer induction by oncogenes. |
| | | | | **CO4:** Summarize the preparation of vaccines and monoclonal antibodies. |
| | | | | **CO5:** Explain the principle and applications of various immunological techniques. |
| 8 | IV | 20BYP4IT42 | Immunology & Immunotechnology -Practical | **CO1:** Experiment on antigen- antibody reactions |
| | | | | **CO2:** Analyze the Total RBC count and Total leucocytes count. |
| 9 | IV | 20BYCCMB43 | Microbial Biotechnology | **CO1:** Summarize the concepts of microbial growth and types of fermenters. |
| | | | | **CO2:** Discuss downstream processing**.** |
| | | | | **CO3:** Explain microbial metabolites and enzyme technology. |
| | | | | **CO4:** Outline the types of environmental pollution and bioremediation. |
| | | | | **CO5:** Demonstrate the microbial degradation of pollutants. |
| 10 | IV | 20BYP5MB42 | Microbial Biotechnology-Practical | **CO1:** Expertise in fermentation technology |
| | | | | **CO2:** Know the production of alcohol , wine aspartic |

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| | | | | acid from various fungal species. |
| | | | | **CO3:** Out line the microbes and Degradation of pesticides |
| 11 | V/VI Pair 1 | 20BYSEC11TN3 | Techniques in nursery Development | **CO1:** Understand different types of nurseries |
| | | | | **CO2:** Identify various facilities required to set up of a nursery |
| | | | | **CO3:** Understand expertise related to various practices in a nursery |
| | | | | **CO4:** Acquire skills to get an employment or to become an entrepreneur. |
| 12 | V/VI Pair 1 | 20BYP611TN2 | Techniques in Nursery Development - Practical | **CO1:** List out different types of nurseries and beds. |
| | | | | **CO2:** Identify the nursery tools, implements and containers.& Develop skill on potting media preparation and plant production. |
| 13 | V/VI Pair 1 | 20BYSEC12HC3 | Hydroponics Cultivation | **CO1:** Understand the concept of hydroponics |
| | | | | **CO2:** Acquire the knowledge on soilless cultivation system |
| | | | | **CO3:** Prepare media for hydroponics cultivation |
| | | | | **CO4:** Learn the hydroponic cultivation technique |
| 14 | V/VI Pair 1 | 20BYP712HC2 | Hydroponics cultivation-Practical | **CO1:** List out macronutrients, micronutrients- functions and effect on plants, deficiency symptoms |
| | | | | **CO2:** Demonstrate the importance of temperature and light in hydroponics & Develops skill of weed management and pest management. |
| 15 | V/VI Pair 2 | 20BYSEC21OF3 | Organic framing | **CO1:** Understand the soil profile and nutrients in soil |
| | | | | **CO2:** Appreciate the importance of organic manure and bio fertilizers |
| | | | | **CO3:** Produce vermi compost, farmyard manure from bio waste |
| | | | | **CO4:** Acquire skill on isolation and maintenance of bio fertilizers |
| 16 | V/VI Pair 2 | 20BYP621OF2 | Organic Farming –Practical | **CO1:** Estimate NPK levels in the soil |
| | | | | **CO2:** Demonstrate the collection and processing of raw materials & Equip with the skill of preparation of microbial media. |
| 17 | V/VI | 20BYSEC22B | Biofertilizers | **CO1:** Understand the importance of biofertilizers for |

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| | Pair 2 | B3 | & Biopesticides | sustainable agriculture. |
| | | | | **CO2:** Appreciate the role of VAM in P solubilisation |
| | | | | **CO3:** Define bio pesticide and its nature |
| | | | | **CO4:** Produce bio fertilizers and bio pesticides on large scale |
| | | | | **CO5:** Able to prepare inoculums for field application |
| 18 | V/VI Pair 2 | 20BYP722BB2 | Bio Fertilizers & Bio Pesticides - Practical | **CO1:** Prepare bacterial and fungal media |
| | | | | **CO2:** Isolate and identify symbiotic and free living nitrogen fixing bacteria |
| | | | | **CO3:** Isolate fungal bio control agents from soil samples & Learn field application techniques biofertilizers and biopesticides |
| 19 | V/VI Pair 3 | 20BYSEC31AP1 | Apiculture | **CO1:** Obtain the elementary knowledge of different species and races of honey bees |
| | | | | **CO2:** Appreciate the importance of health and hygiene in Bee keeping |
| | | | | **CO3:** Maintain the Bee hives in a scientific way |
| 20 | V/VI Pair 3 | 20BYP631AP2 | Apiculture - Practical | **CO1:** Maintain the Bee hives in a scientific way. |
| | | | | **CO2:** Clean & Maintain Bee Boxes & Understand the methodologies of extracting, preservation and marketing of honey and other products of honey bee |
| 21 | V/VI Pair 3 | 20BYSEC32PC3 | Pearl Culture | **CO1:** Understand the basic concept of pearl culture. |
| | | | | **CO2:** Obtain the elementary knowledge regarding the Anatomical and Physiological aspects of fresh water oysters. |
| | | | | **CO3:** Acquaint with the various types of implantation methods and pearl culture surgery techniques |
| | | | | **CO4:** Acquire skill on production of pearl and its marketing for economic gain |
| 22 | V/VI Pair 3 | 20BYP732PC2 | Pearl Culture - Practical | **CO1:** Execute pre- pearl culture activities |
| | | | | **CO2:** Learn the technique of surgical operation & Develop skill of Post operation activities |
| 23 | I/II | 20LSCEE2 | Environmental education | **CO1:** understand the nature, components of an ecosystem and that humans are an integral part of nature. |

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| | | | | **CO2:**Realize the importance of the environment, the goods and services of healthy biodiversity, and the dependency of humans on the environment. |
| | | | | **CO3:** Discuss the law/ act made by the government to prevent pollution, to protect biodiversity and environment as a whole. |

## Mapping of COs with PSOs & POs

| S.No. | Sem | Course Code | Course Title | COs | PSOs | POs |
|---|---|---|---|---|---|---|
| 1 | I | 20BYCCCG13 | Introduction to Biotechnology, Cell Biology & Genetics | CO1 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO2 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO3 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO4 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO5 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3, PO4 |
| 2 | I | 20BYP1CG12 | Cell Biology & Genetics - Practical | CO1 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3 |
| | | | | CO2 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3 |
| | | | | CO3 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3 |
| 3 | II | 20BYCCME23 | Macromolecules &Enzymology | CO1 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO2 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO3 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO4 | PSO1,PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO5 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| 4 | II | 20BYP2ME22 | MACRO MOLECULES & ENZYMOLOGY - PRACTICAL | CO1 | PSO1, PSO2,PSO3,PSO4 | PO1, PO2, PO3 |
| | | | | CO2 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3 |
| | | | | CO3 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3, PO4 |
| 5 | III | 20BYCCBT33 | Biophysical techniques | CO1 | PSO2, PSO3 | PO1, PO2 |
| | | | | CO2 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO3 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO4 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| 6 | III | 20BYP3BT32 | Biophysical Techniques Practical | CO1 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3 |
| | | | | CO2 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3 |
| | | | | CO3 | PSO1, POS2, POS3 | PO1, PO2, PO4 |
| 7 | IV | 20BYCCI | Immunology | CO1 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |

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| | | T43 | & Immunotechnology | CO2 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| | | | | CO3 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO4 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO5 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| 8 | IV | 20BYP4IT42 | Immunology & Immunotechnology- Practical | CO1 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| | | | | CO2 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| 9 | IV | 20BYCCMB43 | Microbial Biotechnology | 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 | PO1, PO2, PO3 |
| | | | | CO5 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| 10 | IV | 20BYP5MB42 | Microbial biotechnology-practical | CO1 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| | | | | CO2 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3 |
| | | | | CO3 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3 |
| 11 | V/VI Pair 1 | 20BYSEC11TN3 | Techniques in nursery Development | CO1 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| | | | | CO2 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3 |
| | | | | CO3 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO4 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| 12 | V/VI Pair 1 | 20BYP611TN2 | Techniques in Nursery Development - Practical | CO1 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3 |
| | | | | CO2 | PSO1, PSO2, PSO3,,PSO4 | PO1, PO2, PO3 |
| 13. | V/VI Pair 1 | 20BYSEC12HC3 | Hydroponics Cultivation | CO1 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO2 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO3 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO4 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |

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| 14 | V/VI Pair 1 | 20BYP712HC2 | Hydroponics cultivation-Practical | CO1 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3 |
| | | | | CO2 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3 |
| 15. | V/VI Pair 2 | 20BYSEC21OF3 | Organic framing | 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 | PO1, PO2, PO3 |
| 16 | V/VI Pair 2 | 20BYP621OF2 | Organic Farming –Practical | CO1 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3 |
| | | | | CO2 | PSO1, PSO2, PSO3,PSO4 | PO1, PO2, PO3 |
| 17 | V/VI Pair 2 | 20BYSEC22BB3 | Biofertilizers & Biopesticides production | CO1 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO2 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| | | | | CO3 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3 |
| | | | | CO4 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| | | | | CO5 | PSO1, PSO2, | PO1, PO2 |
| 18 | | 20BYP722BB2 | Bio fertilizers and Bio pesticides production - Practical | CO1 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3 |
| | | | | CO2 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| | | | | CO3 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3 |
| 19 | V/VI Pair 3 | 20BYSEC31AP3 | Apiculture | CO1 | PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| | | | | CO2 | PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| | | | | CO3 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| 20 | V/VI Pair 3 | 20BYP631AP2 | Apiculture - Practical | CO1 | PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |

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| | | | | CO2 | PSO2, PSO3, PSO4 | PO2, PO3, PO4 |
| 21. | V/VI Pair 3 | 20BYSEC32PC3 | Pearl Culture | CO1 | PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| | | | | CO2 | PSO2, PSO3, PSO4 | PO2, PO3, PO4 |
| | | | | CO3 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| | | | | CO4 | PSO1, PSO2, PSO3 | PO1, PO2, PO3 |
| 22 | V/VI Pair 3 | 20BYP732PC2 | Pearl Culture - Practical | CO1 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| | | | | CO2 | PSO2, PSO3, PSO4 | PO1, PO2, PO3, PO4 |
| 23 | I/II | 20LSCEE2 | Environmental education | CO1 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, |
| | | | | CO2 | PSO1, PSO2, PSO3, | PO1, PO2, PO3, |
| | | | | CO3 | PSO1, PSO2, PSO3, PSO4 | PO1, PO2, PO3, |

## Mapping of Courses with PSOs

| Course Title | Course Code | PSO1 | PSO2 | PSO3 | PSO4 |
|---|---|---|---|---|---|
| Introduction to Biotechnology, Cell biology & Genetics | 20BYCCCG13 | ✔ | ✔ | ✔ | ✔ |
| Introduction to Biotechnology, Cell biology & Genetics- practical | 20BYP1CG12 | ✔ | ✔ | ✔ | ✔ |
| Macro molecules & Enzymology | 20BYCCME23 | ✔ | ✔ | ✔ | ✔ |
| Macro molecules & enzymology- practical | 20BYP2ME22 | ✔ | ✔ | ✔ | ✔ |
| Biophyscial Techniques | 20BYCCBT33 | ✔ | ✔ | ✔ | |
| Biophyscial Techniques- practical | 20BYP3BT32 | ✔ | ✔ | ✔ | ✔ |
| Immunology & immunotechnology | 20BYCCIT43 | ✔ | ✔ | ✔ | ✔ |
| Immunology & immunotechnology- practical | 20BYP4IT42 | ✔ | ✔ | ✔ | ✔ |
| Microbial Biotechnology | 20BYCCMB43 | ✔ | ✔ | ✔ | ✔ |
| Microbial Biotechnology Practical | 20BYP5MB42 | ✔ | ✔ | ✔ | ✔ |
| Techniques in nursery Development | 20BYSEC11TN3 | ✔ | ✔ | ✔ | ✔ |
| Techniques in Nursery Development - Practical | 20BYP611TN2 | ✔ | ✔ | ✔ | ✔ |
| Hydroponics Cultivation | 20BYSEC12HC3 | ✔ | ✔ | ✔ | |
| Hydroponics cultivation- Practical | 20BYP712HC2 | ✔ | ✔ | ✔ | ✔ |
| Organic framing | 20BYSEC21OF3 | ✔ | ✔ | ✔ | ✔ |
| Organic Farming –Practical | 20BYP621OF2 | ✔ | ✔ | ✔ | ✔ |
| Biofertilizers & Biopesticides production | 20BYSEC22BB3 | ✔ | ✔ | ✔ | ✔ |

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|---|---|---|---|---|---|
| Bio fertilizers and Bio pesticides production - Practical | 20BYP722BB2 | ✔ | ✔ | ✔ | ✔ |
| Apiculture | 20BYSEC31AP3 | ✔ | ✔ | ✔ | ✔ |
| Apiculture - Practical | 20BYP631AP2 | | ✔ | ✔ | ✔ |
| Pearl Culture | 20BYSEC32PC3 | ✔ | ✔ | ✔ | ✔ |
| Pearl Culture - Practical | 20BYP732PC2 | ✔ | ✔ | ✔ | ✔ |
| Environmental education | 20LSCEE2 | ✔ | ✔ | ✔ | |

# Mapping of Courses with POs

| Course | PO1 Essential Knowledge | PO2 Creative and critical thinking and problem solving abilities | PO3 Teamwork and communication skills | PO4 Digital capabilities | PO5 Professionalism and leadership readiness | PO6 Intercultural and ethical competency | PO7 Self awareness and emotional intelligence | PO8 Social Responsibility |
|---|---|---|---|---|---|---|---|---|
| Introduction to Biotechnology, Cell biology & Genetics | ✔ | ✔ | ✔ | ✔ | | | | |
| Introduction to Biotechnology, Cell biology & Genetics- practical | ✔ | ✔ | ✔ | | | | | |
| Macro molecules & Enzymology | ✔ | ✔ | ✔ | ✔ | | | | |
| Macro molecules & enzymology- practical | ✔ | ✔ | ✔ | ✔ | | | | |
| Biophyscial Techniques | ✔ | ✔ | ✔ | | | | | |
| Biophyscial Techniques- practical | ✔ | ✔ | ✔ | | | | | |
| Immunology & immunotechnology | ✔ | ✔ | ✔ | ✔ | | | | |
| Immunology & immunotechnology- practical | ✔ | ✔ | ✔ | ✔ | | | | |
| Microbial Biotechnology | ✔ | ✔ | ✔ | ✔ | | | | |
| Microbial Biotechnology Practical | ✔ | ✔ | ✔ | ✔ | | | | |
| Techniques in nursery Development | ✔ | ✔ | ✔ | ✔ | | | | |
| Techniques in Nursery Development - Practical | ✔ | ✔ | ✔ | | | | | |

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|---|---|---|---|---|---|---|---|---|
| Hydroponics Cultivation | ✔ | ✔ | ✔ | | | | | |
| Hydroponics cultivation- Practical | ✔ | ✔ | ✔ | | | | | |
| Organic framing | ✔ | ✔ | ✔ | ✔ | | | | |
| Organic Farming –Practical | ✔ | ✔ | ✔ | | | | | |
| Biofertilizers & Biopesticides production | ✔ | ✔ | ✔ | ✔ | | | | |
| Bio fertilizers and Bio pesticides production - Practical | ✔ | ✔ | ✔ | ✔ | | | | |
| Apiculture | ✔ | ✔ | ✔ | ✔ | | | | |
| Apiculture - Practical | ✔ | ✔ | ✔ | ✔ | | | | |
| Pearl Culture | ✔ | ✔ | ✔ | ✔ | | | | |
| Pearl Culture - Practical | ✔ | ✔ | ✔ | ✔ | | | | |
| Environmental education | ✔ | ✔ | ✔ | ✔ | | | | ✔ |