

U T T A R P R A D E S H

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| **Outcome Assessment Plan** | |
| **Domain:** | **Faculty of Biosciences and Biotechnology** |
| **Date:** | September 26, 2020 |
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**Table of Contents**

|  |  |  |
| --- | --- | --- |
|  | **TITLE** | **PAGE NO.** |
| 1 | **Introduction to Faculty of Biosciences and Biotechnology** | **8 – 10** |
|  |  |  |
| 2 | **Introduction of Outcome Assessment Plan** | **11 – 13** |
|  |  |  |
| 3 | **Domain Mission and Broad-Based Goals** | **14 – 16** |
| 3.1 Mission Statement |  |
| 3.2 Broad-Based Educational Goals |  |
| 3.3 Broad-Based Operational Goals |  |
|  |  |  |
| 4 | **Institution Mission and Broad-Based Goals** | **17 – 27** |
| 4.1 Mission Statement |  |
| 4.2 Broad-Based Educational Goals |  |
| 4.3 Broad-Based Operational Goals |  |
|  |  |  |
| 5 | **Programme Mission, PEO’s, PLO’s and Assessment Plan for each Programme** | **28 – 262** |
|  |  |
| **5.1 B.Sc. Anthropology** | **29 – 40** |
| 5.1.1 Programme Mission |  |
| 5.1.2 Programme Educational Objectives |  |
| 5.1.3 Programme Operational Objectives |  |
| 5.1.4 Programme Learning Outcomes |  |
| 5.1.5 Programme Operational Outcomes |  |
| 5.1.6 Programme Educational Outcome Assessment Plan |  |
| 5.1.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.2 M.Sc. Anthropology** | **40 – 54** |
| 5.2.1 Programme Mission |  |
| 5.2.2 Programme Educational Objectives |  |
| 5.2.3 Programme Operational Objectives |  |
| 5.2.4 Programme Learning Outcomes |  |
| 5.2.5 Programme Operational Outcomes |  |
| 5.2.6 Programme Educational Outcome Assessment Plan |  |
| 5.2.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.3 M.Sc. by Research (Microbial Biotechnology)** | **54 – 64** |
| 5.3.1 Programme Mission |  |
| 5.3.2 Programme Educational Objectives |  |
| 5.3.3 Programme Operational Objectives |  |
| 5.3.4 Programme Learning Outcomes |  |
| 5 | 5.3.5 Programme Operational Outcomes |  |
| 5.3.6 Programme Educational Outcome Assessment Plan |  |
| 5.3.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.4 B.Sc. (H) Microbiology** | **64 – 73** |
| 5.4.1 Programme Mission |  |
| 5.4.2 Programme Educational Objectives |  |
| 5.4.3 Programme Operational Objectives |  |
| 5.4.4 Programme Learning Outcomes |  |
| 5.4.5 Programme Operational Outcomes |  |
| 5.4.6 Programme Educational Outcome Assessment Plan |  |
| 5.4.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.5 M.Sc. Microbiology** | **73 – 83** |
| 5.5.1 Programme Mission |  |
| 5.5.2 Programme Educational Objectives |  |
| 5.5.3 Programme Operational Objectives |  |
| 5.5.4 Programme Learning Outcomes |  |
| 5.5.5 Programme Operational Outcomes |  |
| 5.5.6 Programme Educational Outcome Assessment Plan |  |
| 5.5.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.6 B. Sc (Hons) Marine Science** | **83 – 91** |
| 5.6.1 Programme Mission |  |
| 5.6.2 Programme Educational Objectives |  |
| 5.6.3 Programme Operational Objectives |  |
| 5.6.4 Programme Learning Outcomes |  |
| 5.6.5 Programme Operational Outcomes |  |
| 5.6.6 Programme Educational Outcome Assessment Plan |  |
| 5.6.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.7 M.Sc. Marine Science** | **91 – 106** |
| 5.7.1 Programme Mission |  |
| 5.7.2 Programme Educational Objectives |  |
| 5.7.3 Programme Operational Objectives |  |
| 5.7.4 Programme Learning Outcomes |  |
| 5.7.5 Programme Operational Outcomes |  |
| 5.7.6 Programme Educational Outcome Assessment Plan |  |
| 5.7.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.8 B. Sc (Hons) Life Sciences** | **106 – 118** |
| 5.8.1 Programme Mission |  |
| 5.8.2 Programme Educational Objectives |  |
| 5.8.3 Programme Operational Objectives |  |
| 5.8.4 Programme Learning Outcomes |  |
| 5.8.5 Programme Operational Outcomes |  |
| 5.8.6 Programme Educational Outcome Assessment Plan |  |
| 5 | 5.8.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.9 M.Sc. Genomics** | **118 – 128** |
| 5.9.1 Programme Mission |  |
| 5.9.2 Programme Educational Objectives |  |
| 5.9.3 Programme Operational Objectives |  |
| 5.9.4 Programme Learning Outcomes |  |
| 5.9.5 Programme Operational Outcomes |  |
| 5.9.6 Programme Educational Outcome Assessment Plan |  |
| 5.9.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.10 M. Sc. Immunology**  5.10.1 Programme Mission | **128 – 138** |
| 5.10.2 Programme Educational Objectives |  |
| 5.10.3 Programme Operational Objectives |  |
| 5.10.4 Programme Learning Outcomes |  |
| 5.10.5 Programme Operational Outcomes |  |
| 5.10.6 Programme Educational Outcome Assessment Plan |  |
| 5.10.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.11 M.Sc. Medical Microbiology** | **138 – 149** |
| 5.11.1 Programme Mission |  |
| 5.11.2 Programme Educational Objectives |  |
| 5.11.3 Programme Operational Objectives |  |
| 5.11.4 Programme Learning Outcomes |  |
| 5.11.5 Programme Operational Outcomes |  |
| 5.11.6 Programme Educational Outcome Assessment Plan |  |
| 5.11.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.12 M.Sc. Virology** | **150 – 161** |
| 5.12.1 Programme Mission |  |
| 5.12.2 Programme Educational Objectives |  |
| 5.12.3 Programme Operational Objectives |  |
| 5.12.4 Programme Learning Outcomes |  |
| 5.12.5 Programme Operational Outcomes |  |
| 5.12.6 Programme Educational Outcome Assessment Plan |  |
| 5.12.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.13 B.Sc.(Hons) Biotechnology** | **161 – 169** |
| 5.13.1 Programme Mission |  |
| 5.13.2 Programme Educational Objectives |  |
| 5.13.3 Programme Operational Objectives |  |
| 5.13.4 Programme Learning Outcomes |  |
| 5.13.5 Programme Operational Outcomes |  |
| 5.13.6 Programme Educational Outcome Assessment Plan |  |
| 5.13.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.14 B.Sc.(Hons) Medical Biotechnology** | **169 – 180** |
| 5 | 5.14.1 Programme Mission |  |
| 5.14.2 Programme Educational Objectives |  |
| 5.14.3 Programme Operational Objectives |  |
| 5.14.4 Programme Learning Outcomes |  |
| 5.14.5 Programme Operational Outcomes |  |
| 5.14.6 Programme Educational Outcome Assessment Plan |  |
| 5.14.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.15 B.Sc. (Hons) Zoology** | **180 – 186** |
| 5.15.1 Programme Mission |  |
| 5.15.2 Programme Educational Objectives |  |
| 5.15.3 Programme Operational Objectives |  |
| 5.15.4 Programme Learning Outcomes |  |
| 5.15.5 Programme Operational Outcomes |  |
| 5.15.6 Programme Educational Outcome Assessment Plan |  |
| 5.15.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.16 B. Tech. Biotechnology** | **187 – 194** |
| 5.16.1 Programme Mission |  |
| 5.16.2 Programme Educational Objectives |  |
| 5.16.3 Programme Operational Objectives |  |
| 5.16.4 Programme Learning Outcomes |  |
| 5.16.5 Programme Operational Outcomes |  |
| 5.16.6 Programme Educational Outcome Assessment Plan |  |
| 5.16.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.17 B. Tech. Bioinformatics** | **194 – 201** |
| 5.17.1 Programme Mission |  |
| 5.17.2 Programme Educational Objectives |  |
| 5.17.3 Programme Operational Objectives |  |
| 5.17.4 Programme Learning Outcomes |  |
| 5.17.5 Programme Operational Outcomes |  |
| 5.17.6 Programme Educational Outcome Assessment Plan |  |
| 5.17.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.18 B. Sc. + M. Sc. Biotechnology** | **201 – 211** |
| 5.18.1 Programme Mission |  |
| 5.18.2 Programme Educational Objectives |  |
| 5.18.3 Programme Operational Objectives |  |
| 5.18.4 Programme Learning Outcomes |  |
| 5.18.5 Programme Operational Outcomes |  |
| 5.18.6 Programme Educational Outcome Assessment Plan |  |
| 5.18.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.19 B. Tech. + M. Tech. Biotechnology** | **211 – 217** |
| 5.19.1 Programme Mission |  |
| 5.19.2 Programme Educational Objectives |  |
| 5 | 5.19.3 Programme Operational Objectives |  |
| 5.19.4 Programme Learning Outcomes |  |
| 5.19.5 Programme Operational Outcomes |  |
| 5.19.6 Programme Educational Outcome Assessment Plan |  |
| 5.19.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.20 M. Sc. Biotechnology** | **217 – 225** |
| 5.20.1 Programme Mission |  |
| 5.20.2 Programme Educational Objectives |  |
| 5.20.3 Programme Operational Objectives |  |
| 5.20.4 Programme Learning Outcomes |  |
| 5.20.5 Programme Operational Outcomes |  |
| 5.20.6 Programme Educational Outcome Assessment Plan |  |
| 5.20.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.21 M. Sc. Bioinformatics** | **226 – 235** |
| 5.21.1 Programme Mission |  |
| 5.21.2 Programme Educational Objectives |  |
| 5.21.3 Programme Operational Objectives |  |
| 5.21.4 Programme Learning Outcomes |  |
| 5.21.5 Programme Operational Outcomes |  |
| 5.21.6 Programme Educational Outcome Assessment Plan |  |
| 5.21.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.22 M. Tech. Biotechnology** | **235 – 242** |
| 5.22.1 Programme Mission |  |
| 5.22.2 Programme Educational Objectives |  |
| 5.22.3 Programme Operational Objectives |  |
| 5.22.4 Programme Learning Outcomes |  |
| 5.22.5 Programme Operational Outcomes |  |
| 5.22.6 Programme Educational Outcome Assessment Plan |  |
| 5.22.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.23 M. Sc. In Cellular and Molecular Oncology** | **242 – 253** |
| 5.23.1 Programme Mission |  |
| 5.23.2 Programme Educational Objectives |  |
| 5.23.3 Programme Operational Objectives |  |
| 5.23.4 Programme Learning Outcomes |  |
| 5.23.5 Programme Operational Outcomes |  |
| 5.23.6 Programme Educational Outcome Assessment Plan |  |
| 5.23.7 PEOs – PLOs Mapping |  |
|  |  |
| **5.24 M. Sc. In Stem Cell Science and Technology** | **253 – 262** |
| 5.24.1 Programme Mission |  |
| 5.24.2 Programme Educational Objectives |  |
| 5.24.3 Programme Operational Objectives |  |
| 5.24.4 Programme Learning Outcomes |  |
| 5 | 5.24.5 Programme Operational Outcomes |  |
| 5.24.6 Programme Educational Outcome Assessment Plan |  |
| 5.24.7 PEOs – PLOs Mapping |  |
|  |  |  |
| 6 | **Domain Operational Outcomes and Operational Outcome Assessment Plan** | **263 – 268** |
|  |  |  |
| 7 | **Linkage of outcomes Assessment with Strategic Planning** | **269 – 270** |
|  |  |  |
| 8 | **Appendices** | **271 – 356** |
| 8.1 Format of Assessment Tools |  |
| 8.1.1 Undergraduate Programme |  |
| 8.1.2 Post Graduate Programme |  |
| 8.1.3 Integrated programme |  |
| 8.2 Rubrics |  |
| 8.2.1 Undergraduate Programme |  |
| 8.2.2 Post Graduate Courses |  |
| 8.2.3 Integrated programme |  |
| 8.3 Format of Surveys |  |
| 8.3.1 Undergraduate Programme |  |
| 8.3.2 Post Graduate Programme |  |
| 8.3.3 Integrated programme |  |
| 8.4 Comprehensive Examination |  |
| 8.4.1 Guidelines for Comprehensive Examination |  |
| 8.4.2 Format of Comprehensive Examination |  |

**SECTION I**

**Introduction to Faculty of Biosciences and Biotechnology**

1. **Introduction:**

The scope of Biosciences and related fields in India has witnessed rapid progress in recent years to become one of largest in the world. Considering the wide diversities in the system there is need to enhance its quality, standard and relevance so that graduates passing out from the system can meet the global challenges of 21st century ahead of them. Biosciences and related courses enable students to develop skills that help them to turn out as excellent future researchers, academicians and entrepreneurs. With specialization in different areas, courses under Biosciences domain prepare students to face the constantly advancing scientific world and impart effective research skills. Biosciences and related studies should emphasize not just in creating good professionals but also on improving and enhancing existing skills while passing on research competence to students.

Attention should be laid on aspects such as enhancing the knowledge base, creating highly skilled human resource, generation of innovative products and technologies leading to the upliftment of society.

The potential areas of research in Biosciences and Biotechnology are so vast that it is not possible to make a comprehensive list. Further, new areas of study emerge continuously. However, an indicative list is described under:

**Agriculture**: Transgenics of rice, wheat, cotton, potato, and vegetables. Higher productivity

**Basic research**: On all aspects of molecular biology, genetics, genomics, proteomics, and neurosciences

**Bioengineering** of crops for biofuels and bioenergy, Bio-fertilizers and bio-pesticides

**Bioinformatics**: Algorithm design and development, software and tools for data mining and data warehousing applications. Strengthening infrastructure for handling complex and computationally intensive problems. Biological Data Curation, phylogenetics. Setting up dedicated network centres for developing data warehouses. Exploitation of microbial genome information. Training competent personnel.

**Bioprospecting and Molecular Taxonomy:** Prospecting, molecular characterisation and documentation of economically and ecologically important hotspots of biodiversity in the country.

**Biotechnology for societal development:** Implementing projects for massive employment generation

**Development of diagnostics:** For major diseases, genetic disorders, cancer, tuberculosis, HIV, malaria, and neurological disorders

**Environment and Biodiversity:** Many industrial materials like building materials, fibers, dyes, rubber and oil derive directly from biological sources. Biodiversity is also important to the security of resources such as water, timber, paper, fiber, and food.

**Human Resource Development:** Training teachers, technicians, scientists, industrialists, IPR experts, and so on covering biotechnology research and commercialization.

**Industry:** More public-private partnerships for developing joint research and development programmes for commercially viable projects.

**Low-cost therapeutics:** Developing new vaccines, diagnostics, drugs and drug delivery system; to produce low-cost, small proteins and therapeutics using plants and animals as bioreactors

**Marine resources:** Fisheries, oil, gas, minerals, sand, gravels, renewable energy sources are some of the marine resources that find their applications in Marine tourism, waste disposal and detoxification, Carbon dioxide capture and storage, habitats, nutrient recycling, water circulation and exchange, gas and climate regulation etc.

**Medical Biotechnology:** Techniques like gene therapy, recombinant DNA technology and polymerase chain retort which employ genes and DNA molecules to diagnose diseases. There are various applications of Biotechnology such as Gene therapy, Biopharmaceuticals, Pharmacogenomics, genetic testing etc. in the field of medicine.

**Medicinal and aromatic plants:** Introduction and marketing of herbal products

**Herbal drugs and Nutraceuticals.** Genetic engineering of medicinal plants

**Metabolic engineering:** Use of recombinant DNA technology

**Neurosciences:** Neurodegenerative diseases such as Alzheimer’s, Parkinson’s, and motor neuron disease, which would cover study of molecular genetics of these disorders. Neuro-AIDS, autism, and dyslexia.

**Plant tissue culture:** Providing tissue culture technology at the grassroots level to cover the most plant rich regions of the country which need massive afforestation and wasteland recovery. Utilisation of tissue culture for enrichment of genetic diversity. Genetic manipulation of cell culture in forestry for disease resistance and reduction of regeneration time.

**Vaccine research for major livestock diseases**

The industry /profession needs are continuously changing while the global environment of education around the world is witnessing changes.

**Inclusion of Education 4.0 in Biosciences and Biotechnology**:

The field of Biotechnology signals a growing trend involving crosstalk amongst sciences, engineering, and the growing processing power of the fastest computers which have been utilized for developing personalized medicines and significantly enhanced drug delivery, the use of new energy generators and supercomputers designed on interconnected biological processes, precise control over properties including biocompatibility of materials and miniature sensors that enable significantly improved diagnosis and real-time health monitoring.

Its fascinating to witness how disruptive innovations can truly change the way biotechnology and its allied services would be used for the benefit of the society. However, if the waves of change hit us unprepared – which we are now – we would not be able to use these potential technologies to the optimum. So our system needs to be consciously and purposely redesigned, piece by piece. If we are unprepared for the future, then this great opportunity will be lost.

To prepare and align with the skills and competencies required by students for make them industry 4.0 ready, workshop/panel discussions were held in which eminent speakers from the Biosciences industry were invited. Extensive discussion in various committees such as Program Review and Outcome Assessment (PROAC), Area Advisory Board (AAB), and Board of Studies (BoS) were held. The skills and competencies required by students for making them Industry 4.0 ready were identified. Benchmarking of Model Framework with statuary bodies and premier institutes was done and based on this data extensive deliberation at domain and university levels was carried out. Thereafter, Model Frame Works (MFWs) of various programme groups were revised, syllabi of various existing subjects were updated and professional skill development activities included, new subjects in accordance with Industry 4.0 were designed and the outcome assessment plan (OAP) for the upcoming academic year 2019-20 was also revisited.

# SECTION II:

# Introduction of Outcome Assessment Plan

**Outcome Assessment**

Outcome assessment is a systematic, evaluative process that is implemented to secure learning experiences that are congruent with original goals and objectives; thereby providing a basis for the effectiveness and continuous quality improvement of the academic unit.

1. The annual outcome assessment process is more qualitative and focuses on improving teaching by analyzing student learning outcomes.
2. The programme review process is more quantitative and focuses on the programme/discipline as a whole, how effective it is, and that our students are learning.
3. To achieve the above, some aspect of each programmes goals and objectives needs to be assessed on an annual basis.
4. All programme and general education goals shall be evaluated annually

The outcome assessment plan includes:

1. **Mission** - The Mission is defined for the domain which flows down to the Institution level and finally to the programme level. The mission at the institution and programme level is aligned with the domain mission
2. **Broad Based Goals:** - The broad based goals are defined under the following categories:
   1. **Educational Goals:** The Educational Goals are defined at Domain, Institution and Programme level. The Educational Goals at the institution and programme level are aligned with the domain mission.
      1. **Operational Goals:** The Operational Goals are defined at Domain, Institution and Programme level. The Operational Goals at the institution and programme level are aligned with the domain mission.
3. **Outcomes:** The Outcomes are defined under the following categories:
   1. **Operational Outcomes:** The operational outcomes are defined for the domain and assessed at the domain level
   2. **Programme Learning Outcomes - The** Learning outcomes are defined for each programme and each learning outcome is assessed to identify that the established learning objectives are achieved.
   3. **Mapping of PEOs and PLOs –** The relationship of PEOs and PLOs are clearly indicated through the mapping of learning outcomes with the established Objective. Each outcome addresses some objective and achievement of outcome indicates the attainment of Objective
4. **Assessment of Learning and Operational Outcomes** – Each learning outcome is assessed by at least one direct and one indirect method. Similarly Operational outcomes are also assessed using the operational assessment tools. It also ensures that outcomes achieved are consistent with the mission. The results of the annual assessments and other data are used to determine the effectiveness of the programme during the programme review process.

## Programme Review: **Through the review of our programs we seek to demonstrate that**:

* Students are **learning** the knowledge, skills, and habits necessary to achieve the programme/discipline goals and objectives
* The **programme/discipline goals** are derived from and support the university’s mission
* The **curriculum** is coherent, current and consistent
* The **instruction** is effective in enabling student
* The **resources** are adequate for the production of student learning.
* The academic **support services** are adequate to facilitate student learning.

**SECTION III:**

**DOMAIN MISSION AND BROAD-BASED GOALS /OBJECTIVES**

**DOMAIN MISSION AND BROAD-BASED GOALS /OBJECTIVES**

**3.1 Mission Statement**

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| **Mission of Faculty of Biosciences & Biotechnology** |
| To provide education at all levels in all disciplines of Bio-Sciences and Biotechnology, futuristic and emerging frontier areas of knowledge, learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regard for human values, pride in their heritage and culture, a sense of right and wrong, yearning for perfection and courage of conviction and action. |

**3.2 Broad-Based Goals / Objectives at Domain / Faculty Level**

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| **Educational Goals** | |
|  | The student shall be able to **develop** knowledge and skills to integrate principles of Biosciences and Biotechnology to achieve academic excellence |
|  | The student shall **demonstrate** research skills and conduct innovative research in thrust areas benefitting society which will enhance the intellectual capital of the domain. |
|  | The student shall be able to **use** and **apply** latest IT tools to analyze and interpret scientific data |
|  | The student shall be able to **interpret** and **comprehend** research in biosciences and biotechnology in order to solve scientific problems. |
|  | The student shall be able to **employ** effective communication skills to enhance interpersonal relationship. |
|  | The student shall be able to **attain** leadership skills and perform responsibly as an individual as well as in a team while maintaining accountability and output. |
|  | The student shall be able to **develop** into a global citizen to build a sustainable world community. |
|  | The student shall **practice** ethical behavior and develop empathy towards environmentally and culturally sensitive issues of the society. |
|  | The student shall be able to **develop** networking and entrepreneurship skills and create a strong network with the industry and alumni. |
|  | The student shall be able to **evaluate** and reflect the virtue of lifelong learning. |
|  | The student shall be able to **analyze** the need for environmental conservation and develop sustainable technologies. |
|  | The student shall be able to **extend** various aspects of biosciences to achieve holistic and societal development. |

**3.3 Broad-Based Operational Goals (Resources Required) At Faculty / Domain Level**

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| **Sl. No.** | **Operational Goals** |
| **Faculty of Bio Sciences & Biotechnology will** | |
| 1 | **Create** appropriate teaching learning resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students |
| 2 | **Provide** Professional development programmes/opportunities to the faculty and staff   to regularly upgrade their  knowledge and skills and bring excellence in teaching, learning and research |
| 3 | **Demonstrate** sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| 4 | Continuously strive **to build** strong industry interaction, alumni networks and empanelment of expertise from industry. |
| 5 | Continually **improve** the quality of facilities, services, resources and processes with an aim to attain **national** and international accreditations and institutional ranking. |
| 6 | **Arrange all necessary** support system for the students to facilitate campus recruitment, higher education or starting their own ventures. |
| 7 | **Act** ethically to ensure transparency and good governance **while discharging** various  responsibilities to its  stakeholders and execution of policies and programs |
| 8 | **Create** opportunities forinternational exposure for its students and faculty. |

# SECTION IV:

# INSTITUTION MISSION AND BROAD-BASED GOALS /OBJECTIVES

# 4. INSTITUTION MISSION AND BROAD-BASED GOALS /OBJECTIVES

## Name of the Institution: **Amity Institute of Anthropology(AIA)**

## **4.1 Mission Statement**

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| **Mission of Institution** |
| To provide education at all levels in all areas of Anthropology and in the futuristic and emerging frontier areas of knowledge, learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong and yearning for perfection and imbibe attributes of courage of conviction and action. |

## **4.2 Broad-Based Goals / Objectives at Amity Institute of Anthropology**

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| **Educational Goals** | |
| 1 | The student shall be able develop knowledge and skills in anthropology and attain academic excellence. |
| 2 | The student shall demonstrate research capability by performing research based project work/dissertation/field work in collaboration with national and international institutes of repute. |
| 3 | The student shall be able to use and apply computational tools to analyze and interpret anthropological data |
| 4 | The student shall be able to comprehend and interpret research in anthropology in order to solve scientific and social problems. |
| 5 | The student shall be able to develop effective communication skills to enhance interpersonal relationship |
| 6 | The student shall be able to develop leadership skills and perform reasonably as an individual as well as in a team while maintaining accountability and output. |
| 7 | The student shall be able to develop global citizenship skills to build a sustainable world community. |
| 8 | The student shall be able to demonstrate ethical behavior and develop sensitivity towards environmentally and culturally sensitive issues of the society |
| 9 | The student shall be able to develop networking and entrepreneurship skills and create a strong network with the organization/industry and alumni |
| 10 | The student shall be able to evaluate and reflect the virtue of lifelong learning. |
| 11 | The student shall be able to recognize the need for environmental conservation and develop sustainable technologies |
| 12 | The student shall be able to integrate various aspects of anthropology to achieve holistic and societal development. |

**4.3 Broad-Based Operational Goals (Resources Required) At Amity Institute of Anthropology**

|  |  |
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| **Operational Goals** | |
| 1 | AIA will create appropriate teaching learning resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students |
| 2 | AIA will provide Professional development programmes/opportunities to the faculty and staff to regularly upgrade their knowledge and skills and bring excellence in teaching, learning and research |
| 3 | AIA will demonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| 4 | AIA will continuously strive to build strong industry interaction, alumni networks and empanelment of expertise from industry/government/non-government organizations |
| 5 | AIA will continually improve the quality of facilities, services, resources and processes with an aim to attain national and international accreditations and institutional ranking |
| 6 | AIA will arrange all necessary support system for the students to facilitate placement, higher education or in starting their own ventures. |
| 7 | AIA will act ethically to ensure transparency and good governance while discharging various responsibilities to its stakeholders and execution of policies and programs |
| 8 | AIA will create opportunities for international exposure, collaborative ventures with international academic institutions for its students and faculty. |

Name of the Institution: **Amity Institute of Microbial Biotechnology (AIMB)**

## **4.1 Mission Statement**

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| **Mission of Institution** |
| To provide education at all levels in all disciplines of Microbial Biotechnology, futuristic and emerging frontier areas of knowledge, learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regard for human values, pride in their heritage and culture, a sense of right and wrong, yearning for perfection and courage of conviction and action. |

## **4.2 Broad-Based Goals / Objectives at Institution Level**

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| **Educational Goals** | |
| 1. | The student shall **develop** knowledge and skills to integrate principles of Microbial Biotechnology to achieve academic excellence |
| 2. | The student shall be able to **demonstrate** research skills and conduct innovative research in thrust areas of Microbial Biotechnology for benefitting society. |
| 3. | The student will be able to **use** IT tools for analyzing biological data. |
| 4. | The student shall be able to justify and **interpret** research in Microbial biotechnology in order to solve scientific problems |
| 5. | The student shall **develop** effective communication skills to disseminate technical information |
| 6. | The student shall **develop** leadership and entrepreneurial skills and perform responsibly as an individual as well as in a team while maintaining accountability and output. |
| 7. | The student shall be able to **develop** global citizenship skills to build a sustainable world community. |
| 8. | The student shall be able to **demonstrate** ethical behavior and develop sensitivity towards environmentally and culturally sensitive issues of the society |
| 9. | The student shall **develop** networking skills and build a strong network with the industry and alumni |
| 10. | The student shall be able to **evaluate** and reflect the virtue of lifelong learning |
| 11. | The student shall be able to identify and **analyze** and create new understanding with relevance to environment conservation. |
| 12. | The student shall be able to **integrate** various aspects of learning and achieve holistic development |

**4.3 Broad-Based Operational Goals (Resources Required) At Institution level**

|  |  |
| --- | --- |
| **Operational Goals** | |
| 1 | Amity Institute of Microbial Biotechnology (AIMB) will **create** appropriate teaching learning resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students |
| 2 | AIMB will **provide** Professional development programmes/opportunities to the faculty and staff   to regularly upgrade their  knowledge and skills and bring excellence in teaching, learning and research |
| 3 | AIMB will **demonstrate** sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| 4 | AIMB will continuously strive **to build** strong industry interaction, alumni networks and empanelment of expertise from industry. |
| 5 | AIMB will continually **improve** the quality of facilities, services, resources and processes with an aim to attain national and international accreditations and institutional ranking. |
| 6 | AIMB will **arrange all necessary** support system for the students to facilitate campus recruitment, higher education or starting their own ventures. |
| 7 | AIMB will **act** ethically to ensure transparency and good governance **while discharging** various  responsibilities to its  stakeholders and execution of policies and programs |
| 8 | AIMB will **create** opportunities forinternational exposure for its students and faculty. |

## Name of the Institution: **Amity Institute of Microbial Technology (AIMT)**

## **4.1 Mission Statement**

|  |
| --- |
| **Mission of Institution** |
| To provide education at all levels in all disciplines of Microbial Technology and in the futuristic and emerging frontier areas of knowledge, learning, and research and to develop the overall personality of students by making them not only excellent professional but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong and yearning for perfection and imbibe attributes of courage of conviction and action. |

## **4.2 Broad-Based Goals / Objectives at Institution Level**

|  |  |
| --- | --- |
| **Educational Goals** | |
|  | The student shall be able to develop knowledge and skills to integrate principles of Microbial Technology to achieve academic excellence. |
|  | The student shall be able to integrate various aspects of learning and achieve holistic development. |
|  | The student shall be able to develop intellectual capital of the institute by conducting research and innovation, using modern methods/tools of microbial technology. |
|  | The student shall be able to demonstrate research capability by performing research based project work/dissertation in national and international biotechnology laboratories of repute. |
|  | The student shall be able to develop core values of the university and demonstrate ethical conduct. |
|  | The student shall be able to interpret cultural diversity and the consequent responsibilities in relation to the society and environment. |
|  | The student shall be able to develop networking skills and establish links with industries and alumni. |
|  | The student shall be able to interpret taught concepts to design and undertake practical and professional work thereby improving employment and entrepreneurial skills. |
|  | The student shall be able to apply good governance, in terms of value addition and functioning. |
|  | The student shall be able to evaluate and reflect the habit of lifelong learning. |
|  | The student shall be able to apply scientific implementation to develop learning outcomes |
|  | The student shall be able to interpret perceived knowledge for skill development |

**4.3 Broad-Based Operational Goals (Resources Required) At Institution level**

|  |  |
| --- | --- |
| **Operational Goals** | |
| 1 | AIMT intends to provide educational excellence in teaching/academic delivery. |
| 2 | AIMT will provide academically conducive environment for holistic development of students |
| 3 | AIMT will facilitate environment for innovation and research excellence for the intellectual growth of faculty and students. |
| 4 | AIMT will inculcate core values of the university and ethical conduct amongst students, faculty and staff. |
| 5 | AIMT will encourage cultural diversity and a sense of social and environmental responsibility. |
| 6 | The institute will provide opportunities for international collaborations and exposure to faculty and students. |
| 7 | AIMT will proactively build strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training. |
| 8 | AIMT will facilitate employment opportunities and also support students to start their own ventures. |
| 9 | AIMT will facilitate good governance in discharge of responsibilities and execution of policies and programmes. |

## **Name of the Institution: Amity Institute of Marine Science and Technology (AIMST)**

## **4.1 Mission Statement**

|  |
| --- |
| **Mission of Institution** |
| “To provide education at all levels in the discipline of Marine Science and Technology and in the Futuristic and Emerging frontier area of knowledge, learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong yearning for perfection and imbibe attributes of courage of conviction and action”. |

## **4.2 Broad-Based Goals / Objectives at Institution Level**

|  |  |
| --- | --- |
| **Educational Goals** | |
| 1 | The students of AIMST shall be able to develop knowledge and skills to integrate principles of Marine science and allied areas to achieve academic excellence |
| 2 | The student of AIMST shall demonstrate research skills and conduct innovative research in thrust areas benefitting society which will enhance the intellectual capital in the area of marine science. |
| 3 | The student of AIMST shall be able to use and apply latest IT tools to analyze and interpret scientific data. |
| 4 | The student of AIMST shall be able to comprehend and interpret research in Marine science and related areas in order to solve scientific problems |
| 5 | The student of AIMST shall be able to develop effective communication skills to enhance interpersonal relationship. |
| 6 | The student of AIMST shall be able to develop leadership and entrepreneurial skills and perform responsibly as an individual as well as in a team while maintaining accountability and output. |
| 7 | The student of AIMST shall be able to develop global citizenship skills to build a sustainable world |
| 8 | The student of AIMST shall demonstrate ethical behaviour and develop sensitivity towards coastal environment and culturally sensitive issues of the society. |
| 9 | The student of AIMST shall develop networking skills and build a strong network with the industry and alumni |
| 10 | The students of AIMST shall be able to evaluate and reflect habit of lifelong learning.. |
| 11 | The student of AIMST shall be able to recognize the need for environmental conservation and develop sustainable technologies |
| 12 | The student of AIMST shall be able to integrate various aspects of learning and achieve holistic development |

**4.3 Broad-Based Operational Goals (Resources Required) At Institution level**

|  |  |
| --- | --- |
| **Sl. No.** | **Operational Goals** |
|  | |
| 1 | **AIMST will Create** appropriate teaching learning resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students |
| 2 | **AIMST will provide** Professional development programmes/opportunities to the faculty and staff   to regularly upgrade their  knowledge and skills and bring excellence in teaching, learning and research |
| 3 | **AIMST will demonstrate** sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| 4 | **AIMST will l** continuously strive **to build** strong industry interaction, alumni networks and empanelment of expertise from industry. |
| 5 | **AIMST will l** continually **improve** the quality of facilities, services, resources and processes with an aim to attain **national** and international accreditations and institutional ranking. |
| 6 | **AIMST will arrange all necessary** support system for the students to facilitate campus recruitment, higher education or starting their own ventures. |
| 7 | **AIMST will act** ethically to ensure transparency and good governance **while discharging** various  responsibilities to its  stakeholders and execution of policies and programs |
| 8 | **AIMST will create** opportunities forinternational exposure for its students and faculty. |

**Name of the Institution: Amity Institute of Virology & Immunology**

**4.1 Mission Statement**

|  |
| --- |
| **Mission of Institution** |
| To develop the overall personality of students by making them not only "excellent professionals" but also good individuals, with understanding and regards for "human values", pride in their heritage and culture, a sense of right and wrong, and a yearning for perfection. |

**4.2 Broad-Based Goals / Objectives at Institution Level**

|  |  |
| --- | --- |
| **Educational Goals** | |
|  | The student shall be able to **develop** knowledge and skills to attain academic excellence in the field of Virology and Immunology. |
|  | The student shall **demonstrate** research skills to conduct research in the thrust areas of Virology and Immunology to benefit the society. |
|  | The student shall be able to **use** and **apply** modern IT tools to analyze the biological data to arrive at logical conclusions. |
|  | The student shall be able to **analyze** and **interpret** scientific data to solve technical, conceptual and abstract scientific problems. |
|  | The student shall be able to **develop** effective communication skills to disseminate technical information and ability to **write** effective reports and reviews for scientific journals. |
|  | The student shall be able to **demonstrate** effectiveness and responsibility as an individual as well as in a team while maintaining accountability and output. |
|  | The student shall be able to **develop** global citizenship skills to build a sustainable world community. |
|  | The student shall be able to **interpret** principles of ethics and apply them to develop sensitivity towards various social and cultural issues of the society. |
|  | The student shall be able **develop** networking and entrepreneurship skills and establish links with industry and alumni. |
|  | The student shall be able to **create** the virtue of lifelong learning. |
|  | The student shall be able to **create** and **develop** thought process for environmental preservation by developing environmentally sustainable technologies. |
|  | The student shall be able to **integrate** various aspects of Virology and Immunology to achieve holistic and societal development. |

**4.3 Broad-Based Operational Goals (Resources Required) At Institution level**

|  |  |  |  |
| --- | --- | --- | --- |
| **Operational Goals** | | |  |
| 1 |  | Amity Institute of Virology & Immunology aims to provide valuable resources to achieve academic excellence and holistic development of students |
| 2 |  | AIVI will encourage faculty members and students to obtain funded research projects/consultancy from government agencies and industry and also build international collaborations |
| 3 |  | AIVI will provide complete support to the faculty members and students to publish their research in highly reputed indexed national and international journals |
| 4 | AIVI will provide support for research excellence and facilitate patenting of innovation and  Subsequent commercialization thereby increasing the intellectual capital. | |
| 5 | AIVI will facilitate cultivation of core values of the university and ethical conduct amongst students, faculty and staff | |
| 6 | AIVI will encourage cultural diversity and a sense of social and environmental responsibility | |
| 7 | AIVI will provide strong industry interaction by way of alumni networks and empanelment of expertise from industry to proactively seek suggestions on curricula, pedagogy and training. | |
| 8 | AIVI will implement good governance in discharge of responsibilities and execution of policies and programs. | |
| 9 | AIVI will facilitate opportunities for employment and also support students to start their own ventures. | |

**Amity Institute of Molecular Medicine & Stem Cell Research (AIMMSCR)**

## **4.1 Mission Statement**

|  |
| --- |
| **Mission of Institution** |
| “To provide education at all levels in the discipline of Molecular Medicine and Stem Cell Research and in the Futuristic and Emerging frontier area of knowledge, learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong yearning for perfection and imbibe attributes of courage of conviction and action”. |

## **4.2 Broad-Based Goals / Objectives at Institution Level**

|  |  |  |
| --- | --- | --- |
| **Educational Goals** | | |
| 1 |  | The student shall be able to **develop** knowledge and skills in cancer and stem cell biology and attain academic excellence. |
| 2 |  | The student shall **create** intellectual capital by conducting research and innovation, using modern techniques of cancer and stem cell biology. |
| 3 |  | The student shall be able to **apply** computational tools in theory and practice of cancer and stem cell biology. |
| 4 |  | The student shall **devise** solutions and **design** experiments using research-based knowledge and scientifically proven methodology. |
| 5 |  | The student shall be able to **develop** good communication and networking skills and establish links with industries and alumni. |
| 6 |  | The student shall be able to **analyze** effectively as an individual, and as a member or leader in diverse teams in multidisciplinary settings. |
| 7 |  | The student shall be able to **identify** cultural and social diversity in the world and the consequent responsibilities in becoming a true global citizen. |
| 8 |  | The student shall be able to **develop** core values of the university and demonstrate ethical conduct. |
| 9 |  | The student shall be able to **interpret** taught concepts to design and undertake practical and professional work, thereby improving employment and entrepreneurial skills. |
| 10 |  | The student shall be able to **evaluate** and reflect the habit of lifelong learning. |
| 11 |  | The student shall be able to **explain** the impact of the modifications in existing life forms under standard health and environmental parameters and also solve other issues related to environment, thus ensuring sustainable development. |
| 12 |  | The student shall **apply** the knowledge of biosciences and cancer and stem cell biology for the benefit of society. |

**4.3 Broad-Based Operational Goals (Resources Required) At Institution level**

|  |  |  |
| --- | --- | --- |
| **Operational Goals** | | |
| 1 |  | AIMMSCR will **create** appropriate resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students. |
| 2 |  | AIMMSCR will **provide** opportunities to the faculty and staff   to regularly upgrade their knowledge and skills by facilitating their participation in professional development programmes. |
| 3 |  | AIMMSCR will **demonstrate** sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| 4 |  | AIMMSCR will continuously strive **to build** strong industry interaction, alumni networks and empanelment of expertise from industry. |
| 5 |  | AIMMSCR will continually **improve** processes and systems with an aim to attain national and international accreditations and institutional ranking. |
| 6 |  | AIMMSCR will **extend** support to the students in order to facilitate campus recruitment, higher education or starting their own ventures. |
| 7 |  | AIMMSCR will **act** ethically to ensure transparency and good governance while discharging various responsibilities to its stakeholders and execution of policies and programs. |
| 8 |  | AIMMSCR will **create** opportunities forinternational exposure for its students and faculty. |

**Amity Institute of Biotechnology**

## **4.1 Mission Statement**

|  |
| --- |
| **Mission of Institution** |
| To impart holistic education in all areas of Biotechnology, emerging areas of knowledge, learning and research and for development of the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regard for human values, pride in their heritage and culture, yearning for perfection and courage of conviction and action. |

## **4.2 Broad-Based Goals / Objectives at Amity Institute of Biotechnology**

|  |  |  |
| --- | --- | --- |
| **Educational Goals** | | |
| 1 |  | The student shall be able to **develop** knowledge and skills in biotechnology and attain academic excellence. |
| 2 |  | The student shall **create** intellectual capital by analyzing problems and devising solutions using modern techniques of biotechnology. |
| 3 |  | The student shall be able to **apply** computational tools in theory and practice of biotechnology. |
| 4 |  | The student shall **devise** solutions and **design** experiments using research-based knowledge and scientifically proven methodology. |
| 5 |  | The student shall be able to **develop** good communication and networking skills and establish links with industries and alumni. |
| 6 |  | The student shall be able to **analyze** effectively as an individual, and as a member or leader in diverse teams in multidisciplinary settings. |
| 7 |  | The student shall be able to **identify and explain** cultural and social diversity in the world, environmental issues and the consequent responsibilities in becoming a true global citizen, thus ensuring sustainable development. |
| 8 |  | The student shall be able to **develop** core values of the university and demonstrate ethical conduct. |
| 9 |  | The student shall be able to **interpret** taught concepts to design and undertake practical and professional work, thereby developing an attitude of innovation and entrepreneurship. |
| 10 |  | The student shall be able to **evaluate** and reflect the habit of lifelong learning. |

**4.3 Broad-Based Operational Goals (Resources Required) At Amity Institute of Biotechnology**

|  |  |
| --- | --- |
| **Sl. No.** | **Operational Goals** |
| 1 | Amity Institute of Biotechnology will **create** appropriate resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students. |
| 2 | AIB will **provide** opportunities to the faculty and staff   to regularly upgrade their knowledge and skills by facilitating their participation in professional development programmes. |
| 3 | AIB will **demonstrate** sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| 4 | AIB will continuously strive **to build** strong industry interaction, alumni networks and empanelment of expertise from industry. |
| 5 | AIB will continually **improve** processes and systems with an aim to attain national and international accreditations and institutional ranking. |
| 6 | AIB will **extend** support to the students in order to facilitate campus recruitment, higher education or starting their own ventures. |
| 7 | AIB will **act** ethically to ensure transparency and good governance while discharging various responsibilities to its stakeholders and execution of policies and programs. |
| 8 | AIB will **create** opportunities forinternational exposure for its students and faculty. |

# Section V:

# Programme Mission, PEO’s, PLO’s and Assessment Plan for each Programme

### **5.1 Programme–B. Sc. (H)Anthropology**

### 

## **5.1.1 Mission Statement**

|  |
| --- |
| **ProgrammeMission** |
| To impart education at undergraduate level in all areas of Anthropology and in the futuristic and emerging frontier areas of knowledge, learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong and yearning for perfection and imbibe attributes of courage of conviction and action. |

## **5.1.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
| **Educational Goals** | |
|  | The student shall be to able **gain knowledge and skills** in Anthropology and attain academic excellence. |
|  | The student shall be able to **demonstrate systematic understanding of fundamental relevant questions and practical skills related to Anthropology.** |
|  | The student shall be able to use and **apply computational skills** to analyze and interpret anthropological data |
|  | The student shall be able **to comprehend and interpret various methods of applying Anthropology in order to solve scientific and social problems**. |
|  | The student shall be able to **develop effective communication skills** to enhance interpersonal relationship |
|  | The student shall be able to **develop leadership skills** and perform reasonably on an individual level as well as in a team while maintaining accountability and output. |
|  | The student shall be able to develop into **a responsible global citizen** and to **build a sustainable world community while being aware about core moral and ethical values**. |
|  | The student shall be able to demonstrate ethical behavior and **develop sensitivity towards culturally sensitive issues of the society by being conscious of the cultural diversity and the gendered matrix** of the community. |
|  | The student shall be able to **develop entrepreneurship skills and establish strong social networks with the organization/industry and alumni with the help of an interdisciplinary approach** within the curriculum. |
|  | The student shall be **able to evaluate intellectual curiosity and reflect on the virtues of lifelong learning with the help of varied course curriculum choices aimed at providing tailor made education** to each student based on their needs. |
|  | The student shall be **able to recognize and spread awareness about the need for environmental conservation and sustainable technologies with the help of exposure to various sustainable practices** prevalent among communities across India. |
|  | The student shall be able **to apply various aspects of anthropology** to fulfill societal needs from time to time **with regular exposure to field based assignments and community extension activities** as part of the curriculum |

**5.1.3 Programme Operational Objectives**

|  |  |
| --- | --- |
| **Operational Goals** | |
| 1 | The program will create appropriate teaching learning resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students in anthropology |
| 2 | The program willprovide Professional development programme/opportunities to the faculty and staff to regularly upgrade their knowledge and skills and bring excellence in teaching, learning and research |
| 3 | The program willdemonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| 4 | The program willcontinuously strive to build strong industry interaction, alumni networks and empanelment of expertise from industry/government/non-government organizations |
| 5 | The program willcontinually improve the quality of facilities, services, resources and processes with an aim to attain national and international accreditations and institutional ranking |
| 6 | The program willarrange all necessary support system for the students to facilitate placement, higher education or in starting their own ventures. |
| 7 | The program willact ethically to ensure transparency and good governance while discharging various responsibilities to its stakeholders and execution of policies and programs |
| 8 | The program willcreate opportunities for international exposure, collaborative ventures with international academic institutions for its students and faculty. |

* + 1. **Programme Learning Outcomes**

|  |  |
| --- | --- |
| **Intended Learning Outcomes** | |
| 1 | Student will be able to **define integrated approach to knowledge, perspective, theory, methods and understanding of** the four major sub-fields of Anthropology |
| 2 | Student will be able to **apply anthropological perspectivein understanding social problems and in identifying international/national/regional/local needs** effectively using anthropological methods. |
| 3 | Student will be able to **demonstrate proficiency in conducting researches** through the utilization of recent data collection tools and techniques and software based analyses in accordance with the standards of the discipline |
| 4 | Student will be able to **derive knowledge about the discipline and shall be able to gain insights about diverse cultural traits through the exposure to fieldwork among various communities** |
| 5 | The student will be able to **develop effective communication skills** on various disciplines of anthropology with community, apply knowledge to become effective written and oral communicators in their profession with tenacity in multidisciplinary settings. |
| 6 | Student will be able to **utilize their skills for establishing social entrepreneurial goals** by working independently as well as a part of team to achieve these goals. |
| 7 | Student will be able to **use and apply appropriate research tools, techniques and resources in addressing specific and unique needs of a community** (advocacy, health & nutrition, vulnerability assessments, gender issues etc.) |
| 8 | Student will be able to **value and recognize ethical reasoning and ethical issues** associated with current Anthropological Research. |
| 9 | Students will be able to **plan, organize, collaborate, execute** and **conclude researches** through their continuous engagement and involvement with public social welfare programmes in collaboration with governmental, civil society and non-governmental organizations. |
| 10 | Student will be **able to identify the crucial need to engage in independent and lifelong** leaning in the context of scientific development in the area of Anthropology |
| 11 | Student will be able to **utilize their knowledge and skills to be able to examine environmental conservation** and restoration in the light of global sustainable development goals and rapid development. |
| 12 | Student will **be able to comprehend and synthesize knowledge with industry specific demands** in order to enable enhanced quality researches and occupational expertize through exposure to liberal education approach. |

* + 1. **Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Outcomes** | |
| 1 | The programme will apply appropriate methodology and pedagogical tools for teaching, learning and development. |
| 2 | The curriculum will be contemporary and relevant to meet research and industry requirements and benchmarked on global standards by incorporating feedback from all the stakeholders. |
| 3 | The student of the programme will graduate in the stipulated time period |
| 4 | University will provide academic facilities, technological Resources for teaching and learning at AIA |
| 5 | The student of programme will earn achievements in intra and inter-university extra-curricular activities. |
| 6 | Faculty and students will be engaged in scholarly and professional activities in order to enhance their competencies and to contribute to the existing body of Knowledge. |
| 7 | AIA will integrate ethics and values in teaching, theory and practice, develop and retain excellent students, faculty and staff. |
| 8 | AIA will facilitate cultivation of cultural and environmental conservation values among students. |
| 9 | AIAwill develop and maintain strong relationship with research institutes, alumni and industry. |
| 10 | The programme will facilitate integration of diverse social and cultural environment amongst students and promote environmental conservation values among students |
| 11 | The programme will support all the students for quality placements for career development |
| 12 | The programmewill establish an internal quality cell for operational quality and process improvement. |

**5.1.6 Programme Educational Outcome Assessment for B. Sc. (H)Anthropology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| # | PEO’s | PLO’s | Direct | Tool No for Direct Assessment | Target Performance | Indirect | Tool\_No for Indirect Assessment | Target |
| 1 | The student shall be to able gain knowledge and skills in Anthropology and attain academic excellence. | Student will be able to define integrated approach to knowledge, perspective, theory, methods and understanding of the four major sub-fields of Anthropology | \*Comprehensive Exam, End Term Examination | UG/PLO1/CE Framework | 60% students shall score B and above | Student Exit Survey | UG/PLO/ Student Exit Survey | 80% student’s response range between 4-5 on the Likert Scale in the Student Exit Survey. |
| 2 | The student shall be able to demonstrate systematic understanding of fundamental relevant questions and practical skills related to Anthropology. | Student will be able to apply anthropological perspective in understanding social problems and in identifying international/national/regional/local needs effectively using anthropological methods. | Major Project, Viva-voce | UG/PLO2/TP/SI/VV | 100% students will undertake and complete the project. | Student Exit Survey | UG/PLO/ Student Exit Survey | The Internship Guide rates the students between 4-5 ranges on the Likert Scale in the feedback. |
| Comprehensive Exam | UG/PLO2/CE Framework |
| 3 | The student shall be able to use and apply computational skills to analyze and interpret anthropological data | Student will be able to demonstrate proficiency in conducting researches through the utilization of recent data collection tools and techniques and software based analyses in accordance with the standards of the discipline | Major Project | UG/PLO2/TP/SI/VV | 100% students shall able to leverage IT in order to complete their Assignments and Projects | Student Exit Survey | UG/PLO/ Student Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey |
| Comprehensive Exam | UG/PLO2/CE Framework |
| 4 | The student shall be able to comprehend and interpret various methods of applying Anthropology in order to solve scientific and social problems | Student will be able to derive knowledge about the discipline and shall be able to gain insights about diverse cultural traits through the exposure to fieldwork among various communities | Major Project | UG/PLO4/MP | 100% students shall able to demonstrate Problem Solving and Decision Making Skill | Student Exit Survey | UG/PLO/Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey |
| Comprehensive Exam | UG/PLO4/CE Framework |
| 5 | The student shall be able to develop effective communication skills to enhance interpersonal relationship | The student will be able to develop effective communication skills on various disciplines of anthropology with community, apply knowledge to become effective written and oral communicators in their profession with tenacity in multidisciplinary settings. | \*Rubrics (Communication skills | UG/PLO5/ CS | 80% students should secure a grade of 6 and above on a 10-point scale in the presentation component of communication course. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey.. |
| \*Comprehensive Exam | UG/PLO5/CE Framework |
| 6 | The student shall be able to develop effective communication skills to enhance interpersonal relationship | Student will be able to utilize their skills for establishing social entrepreneurial goals by working independently as well as a part of team to achieve these goals. | Rubrics (Behavioural Science) | UG/PLO6/ BS | 70% students should secure a grade of 6 and above on a 10-point scale.. | Student Exit Survey | UG/PLO/ Student Exit Survey | 80% students shall score ≥ 75% in exit survey.. |
| \*Comprehensive Exam | UG/PLO6/Comprehensive Exam |
| 7 | The student shall be able to develop into a responsible global citizen and to build a sustainable world community while being aware about core moral and ethical values. | Student will be able to use and apply appropriate research tools, techniques and resources in addressing specific and unique needs of a community (advocacy, health & nutrition, vulnerability assessments, gender issues etc.) | \*Rubrics FBL | UG/PLO7/Comprehensive Exam/Rubric | 80% students shall achieve a minimum of “Satisfactory” outcome attainment level. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in the Exit Survey. |
| 8 | The student shall be able to demonstrate ethical behavior and develop sensitivity towards culturally sensitive issues of the society by being conscious of the cultural diversity and the gendered matrix of the community. | Student will be able to value and recognize ethical reasoning and ethical issues associated with current Anthropological Research. | \*Plagiarism Checking of Major project | UG/PLO8/Comprehensive Exam/Rubric | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Student Exit Survey | UG/PLO/ Student Exit Survey | The Industry Internship Guide rates the students between 4-5 range on the Likert Scale in the feedback.  The University will adhere to zero tolerance towards use of unfair means |
| Rubrics (Behavioural Science) |
| 9 | The student shall be able to develop into a responsible global citizen and to build a sustainable world community while being aware about core moral and ethical values. | Students will be able to plan, organize, collaborate, execute and conclude researches through their continuous engagement and involvement with public social welfare programmes in collaboration with governmental, civil society and non-governmental organizations. | \*Major project Rubrics |  | 20% students shall undergo project work in collaboration with external organizations | Student Exit Survey | UG/PLO/ Student Exit Survey | 80% students shall score ≥ 75% in exit survey.. |
| 10 | The student shall be able to evaluate intellectual curiosity and reflect on the virtues of lifelong learning with the help of varied course curriculum choices aimed at providing tailor made education to each student based on their needs.  The student shall be able to recognize and spread awareness about the need for environmental conservation and sustainable technologies with the help of exposure to various sustainable practices prevalent among communities across India. | Student will be able to identify the crucial need to engage in independent and lifelong leaning in the context of scientific development in the area of Anthropology | \*Major project Rubrics |  | Mentors will asses the Learning curve of 100% students. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey.. |
| UG/PLO10/Comprehensive Exam |
| \*Comprehensive Exam |  |
| 11 | The student shall be able to evaluate intellectual curiosity and reflect on the virtues of lifelong learning with the help of varied course curriculum choices aimed at providing tailor made education to each student based on their needs. | Student will be able to utilize their knowledge and skills to be able to examine environmental conservation and restoration in the light of global sustainable development goals and rapid development. | \*Major Project | UG/PLO11/CE Framework | 100 % students will elaborate their research findings through presentations and will defend the viva voce | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 12 | The student shall be able to recognize and spread awareness about the need for environmental conservation and sustainable technologies with the help of exposure to various sustainable practices prevalent among communities across India. | Student will be able to comprehend and synthesize knowledge with industry specific demands in order to enable enhanced quality researches and occupational expertize through exposure to liberal education approach. | NTCC Major Project | UG/PLO12/CE Framework | 100% students will present the seminar and 50% students should secure a grade of 6 and above on a 10-point scale. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey.. |

## **5.1.7 Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)**

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

| PEO PLOs | | PEO 1 | | | PEO 2 | PEO 3 | PEO 4 | PEO 5 | PEO 6 | PEO 7 | PEO 8 | PEO 9 | PEO 10 | PEO 11 | PEO 12 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **bachelor Program** | | | | | | |  |  |  |  |  |  |  |  |  |
| B.Sc (H) Anthropology | | | | | | |  |  |  |  |  |  |  |  |  |
|  | PLO1 | | X |  | | X | X |  |  |  |  |  |  |  | X |
|  | PLO2 | | X | X | | X | X | X | X | X | X | X | X |  | X |
|  | PLO3 | |  | X | | X | X |  |  | X | X |  | X |  |  |
|  | PLO4 | | X | X | | X | X |  | X |  | X |  | X | X | X |
|  | PLO5 | |  |  | |  |  | X | X |  |  | X | X |  | X |
|  | PLO6 | | X |  | |  |  |  | X |  | X |  |  |  | X |
|  | PLO7 | |  |  | |  | X | X |  | X | X | X | X |  |  |
|  | PLO8 | |  |  | | X | X | X | X | X | X | X | X |  | X |
|  | PLO9 | | X | X | | X | X | X | X |  |  |  | X |  | X |
|  | PLO10 | | X | X | | X | X | X |  |  | X | X | X | X |  |
|  | PLO11 | |  |  | | X | X | X | X | X | X | X | X |  | X |
|  | PLO12 | | X | X | | X | X | X |  |  | X | X | X | X | X |

### **5.2 Programme –M. Sc. Anthropology**

## **5.2.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide advanced knowledge at post graduate level in all areas of Anthropology and in the futuristic and emerging frontier areas of knowledge, learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong and yearning for perfection and imbibe attributes of courage of conviction and action. |

## **5.2.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
| **Educational Goals** | |
|  | The student shall be **able to gain knowledge about key concepts, methods in Anthropology and attain academic excellence** |
|  | The student **shall demonstrate proficiency for research and innovation ideas, by utilizing modern methods/tools of anthropology** to appraise industry employability and demands. |
|  | The student shallbe able **to integrate latest IT tools/Bio statistical tools with theory and concepts in Anthropology to analyze and interpret both qualitative and quantitative data.** |
|  | The student shall be able **to suitably comprehend and interpret Anthropological tools and techniques in order to effectively navigate through varied scientific and societal problems**. |
|  | The student shall be **able to develop effective communication skills to establish interpersonal networks and to facilitate linkages between** research and industry. |
|  | The student shall be able to **develop leadership skills** and perform and execute plans reasonably on an individual level as well as in a team while maintaining accountability and output. |
|  | The student shall be able to develop necessary skills **to build a sustainable world community while being aware about core moral and ethical values**. |
|  | The student shall be able to demonstrate ethical behavior and **develop sensitivity towards culturally sensitive issues of the society by being conscious of the cultural diversity and the gendered matrix**of the community. |
|  | The student shall be able to **develop entrepreneurship skills and establish strong social networks with the organization/industry and alumni with the help of an interdisciplinary approach** within the curriculum. |
|  | The student shall be **able to evaluate and reflect on the virtues of lifelong learning with the help of varied course curriculum choices aimed at providing tailor made education** to each student based on their needs. |
|  | The student shall be **able to recognize and spread awareness about the need for environmental conservation and develop sustainable technologies/systems with the help of exposure to various sustainable practices** prevalent among communities across India and world. |
|  | The student shall be **able to integrate various aspects of Anthropology in order to address community needs with regular exposure to field based assignments and community extension activities** as part of the curriculum. |

**5.2.3 Programme Operational Objectives**

|  |  |
| --- | --- |
| **Operational Goals** | |
|  | The program will create appropriate teaching learning resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students in anthropology |
|  | The program will provide Professional development programme/opportunities to the faculty and staff to regularly upgrade their knowledge and skills and bring excellence in teaching, learning and research |
|  | The program willdemonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services. |
|  | The program will continuously strive to build strong industry interaction, alumni networks and empanelment of expertise from industry/government/non-government organizations |
|  | The program will continually improve the quality of facilities, services, resources and processes with an aim to attain national and international accreditations and institutional ranking |
|  | The program willarrange all necessary support system for the students to facilitate placement, higher education or in starting their own ventures. |
|  | The program will act ethically to ensure transparency and good governance while discharging various responsibilities to its stakeholders and execution of policies and programs |
|  | The program willcreate opportunities for international exposure, collaborative ventures with international academic institutions for its students and faculty. |

**5.2.4 Programme Learning Outcomes**

|  |  |
| --- | --- |
| **Intended Learning Outcomes** | |
|  | Student will **identify, apply and interpret the major paradigms, theories, and conceptual frameworks in Anthropological studies** to gain knowledge. |
|  | The student **will identify, interpret, review existing knowledge and subsequently decipher and analyze complex problems** using principles of Anthropology. |
|  | The student **will apply modern IT tools for acquisition and analysis of anthropological data**. |
|  | Student **will interpret and critique research methods/tools/techniques** used in Anthropological research studies to appropriate their application in addressing community needs. |
|  | The student **will develop appropriate level of communication skills to effectively disseminate research and technical information** and **will be able to summarize scientific results**; write effective reports and reviews in scientific journals. |
|  | The student **will demonstrate the ability to work solely or as a member of a team** with effectiveness and responsibility towards the achievement of entrepreneurial goals. |
|  | The student **will apply skills to evolve into a responsible global citizen**. |
|  | The student **will develop sensitivity towards environmental issues and concerns and will be capable of applying the necessary knowledge and skills towards restoring the environment on the principles of sustainable development goals**and conservation of resources. |
|  | Student **will examine, observe, and assess local/regional/national/international needs, and identify as well as suggest suitable intervention and strategies** as a result of exposure to field based assignments. |
|  | Students **will integrate the role of personal development, self-directed study and discovery in learning to develop life-long learning and will synthesize this learning with the latest industry needs and demands to achieve viability** and enhanced quality in researches. |
|  | Student willdevelop skills to recognize **the dynamics of gendered relationships and its manifestation in various sociopolitical as well as economic scenarios of the society** owing to a comprehensive pedagogy that aims to sensitize students towards justice, equity & development through active and extensive social engagements. |
|  | Students will**plan, organize, collaborate, execute and conclude researches** through their continuous engagement and involvement with public social welfare programmes in collaboration with governmental, civil society and non-governmental organizations. |

**5.2.5 Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Outcomes** | |
|  | The programme will promote use of advanced anthropological methodology and pedagogical tools for teaching, learning and development. |
|  | The curriculum will be contemporary, advanced and relevant to meet research and industry/government requirements and benchmarked on global standards by incorporating feedback from all the stakeholders. |
|  | The institute will provide students with excellent academic facilities and technological resources for teaching and learning. |
|  | The students will effectively communicate with global environment by learning value added courses as a part of their academic curriculum. |
|  | Faculty and students will be actively engaged in academic and research in order to enhance their competencies and to contribute to the existing body of Knowledge. |
|  | The programme will integrate ethics and values in teaching, theory and practice and will aim to develop and retain excellent students, faculty and staff. |
|  | The programme will facilitate integration of diverse social and cultural environment amongst students and promote environmental conservation values among students. |
|  | The programme will facilitate research collaborations, invite international delegates and speakers for seminars and conferences and various other opportunities for global exposure. |
|  | The programme will effectively develop and maintain strong relationship with research and academic institutes for joint collaborative research and consultancies in the field of Anthropology |
|  | The programme will maintain alumni network and keep the curriculum responsive to industry needs. |
|  | The programme will support all the students for quality placements in relevant organizations. |
|  | The programme shall establish an internal quality cell for operational quality and process improvement. |

**5.2.6 Programme Educational Outcome Assessment for M. Sc. Anthropology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **#** | **PEO’s** | **PLO’s** | **Direct** | **Tool No for Direct Assessment** | **Target Performance** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall be able to apply knowledge of key concepts, methodologies of Anthropology and attain academic excellence | Student will identify, apply and interpret the major paradigms, theories, and conceptual frameworks in Anthropological studies. | Comprehensive Exam/End Term Exam | PG/PLO1/CE Framework | 60% students shall score B and above | Student Exit Survey | PG/PLO/Exit Survey | 80% student’s response range between 4-5 on the Likert Scale in the Student Exit Survey. |
| 2 | The student shall formulate research and innovation ideas, by using modern methods/tools of anthropology.. | The student will identify, formulate, research literature, review existing knowledge and analyze complex anthropological problems to reach substantiated conclusions using principles of anthropology. | Dissertation Submission | PG/PLO2/Dissertation | 100% students will undertake and complete the Dissertation | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| 3 | The student shallbe able to integrate latest IT tools/Bio statistical tools to analyze and interpret anthropological data | The student will apply modern IT tools for acquisition and analysis of anthropological data. | Practical Exams/Dissertation | PG/PLO3/CE | 100% students shall leverage IT in order to complete their Dissertation | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to comprehend and interpret anthropology in order to solve scientific and societal problems. | Student will interpret and critique research methods used in Anthropological research studies | Project report submission | PG/PLO4/ | 100% students shall complete their projects and submit the report | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| PG/PLO4/CE Framework |
| 5 | The student shall be able to develop effective communication skills to enhance interpersonal relationship | The student will develop appropriate level of communication skills to effectively disseminate research and technical information and shall be able to summarize scientific results; write effective reports and reviews in scientific journals. | \*Rubrics Communication skills | PG/PLO5/ BC | 80% students should secure a grade of 6 and above on a 10-point scale in the presentation of communication skills course | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 6 | The student shalldemonstrate good governance, in terms of value addition and functioning and leadership skills as an individual or as a team. | The student will demonstrate the ability to work independently as individuals and flexibly within a team with effectiveness and responsibility. | \* Behavioural Science rubrics | PG/PLO6/BS | 70% students should secure a grade of 6 and above on a 10-point scale | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 7 | The student shall be able to develop global citizenship skills to build a sustainable world community. | The student will build skills to evolve into a responsible global citizen. | \* Rubrics FBL | UG/PLO7/CE Framework | 80% students should secure a grade of 6 and above on a 10-point scale | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 8 | The student shall be able to develop core values of the university, demonstrate ethical conduct and develop sensitivity towards environmentally and culturally sensitive issues of the society | The student will develop sensitivity to environmental issues and concerns and shall understand principles of ethics within the framework and apply these principles for environmentally and culturally sensitive issues. | \*Plagiarism Checking of project report | PG/PLO8/CE Framework | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Feedback of Internship Guide |  | The Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| 9 | The studentshall demonstrate networking skills and establish links with organizations/industries and alumni. | Student will analyze and assess the global range of anthropological and practices in historical and cultural context | Project submission | PG/PLO9/ | 100 % students shall submit the project | Student Exit Survey | PG/PLO 9/ Student Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| Comprehensive Exam | 60% students shall get a score of B and above |
| 10 | The student shall be able to illustrate and reflect the virtue of lifelong learning. | Students will organize the role of personal development, self-directed study and discovery in learning to develop life-long learning. | \* Comprehensive Exam | PG/PLO10/CE Framework | 60% students shall get a score of B and above | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 11 | The student shall be able to recognize the need for environmental conservation and develop sustainable technologies | Student willdevelop their abilities to recognize environmental and social impacts and to provide leadership on sustainable approaches to complex problems. | \*Section 9 of Comprehensive Exam | PG/PLO11/CE Framework | 60% students shall get a score of B and above |  | \*Section 9 of Comprehensive Exam | PG/PLO11/CE Framework |
| 12 | The student shall be able to integrate various aspects of anthropology to achieve holistic and societal development. | Student will construct attitude or stance towards the world: global citizens. Aspire to contribute to society in a full and meaningful way through their roles as members of local, national and global communities. | \*Comprehensive Exam | PG/PLO12/CE Framework | 60% students shall get a score of B and above | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |

## **5.2.7 Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)**

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

| PEO PLOs | | PEO 1 | | | PEO 2 | PEO 3 | PEO 4 | PEO 5 | PEO 6 | PEO 7 | PEO 8 | PEO 9 | PEO 10 | PEO 11 | PEO 12 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **bachelor Program** | | | | | | |  |  |  |  |  |  |  |  |  |
| *B.Sc (H) Anthropology* | | | | | | |  |  |  |  |  |  |  |  |  |
|  | PLO1 | | X |  | | X | X |  |  |  |  |  |  |  | X |
|  | PLO2 | | X | X | | X | X | X | X | X | X | X | X |  | X |
|  | PLO3 | |  | X | | X | X |  |  | X | X |  | X |  |  |
|  | PLO4 | | X | X | | X | X |  | X |  | X |  | X | X | X |
|  | PLO5 | |  |  | |  |  | X | X |  |  | X | X |  | X |
|  | PLO6 | | X |  | |  |  |  | X |  | X |  |  |  | X |
|  | PLO7 | |  |  | |  | X | X |  | X | X | X | X |  |  |
|  | PLO8 | |  |  | | X | X | X | X | X | X | X | X |  | X |
|  | PLO9 | | X | X | | X | X | X | X |  |  |  | X |  | X |
|  | PLO10 | | X | X | | X | X | X |  |  | X | X | X | X |  |
|  | PLO11 | |  |  | | X | X | X | X | X | X | X | X |  | X |
|  | PLO12 | | X | X | | X | X | X |  |  | X | X | X | X | X |

| Operational  Goals  Operational  Outcomes | | OG1 | OG 2 | OG 3 | OG4 | OG5 | OG6 | OG7 | OG8 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **bachelor’s Level Programs** | | | | |  |  |  |  |  |
| **B.Sc (H) Anthropology** | | | | |  |  |  |  |  |
|  | Operational Outcome 1 | X | X | X |  |  |  |  |  |
|  | Operational Outcome 2 |  |  | X |  |  | X | X |  |
|  | Operational Outcome 3 | X | X | X |  |  |  |  |  |
|  | Operational Outcome 4 | X | X | X |  |  |  |  |  |
|  | Operational Outcome 5 |  | X |  |  | X |  |  |  |
|  | Operational Outcome 6 |  |  |  |  |  |  | X | X |
|  | Operational Outcome 7 |  | X |  |  |  | X | X |  |
|  | Operational Outcome 8 |  |  | X |  |  | X |  |  |
|  | Operational Outcome 9 |  |  |  | X | X |  |  |  |
|  | Operational Outcome 10 |  |  |  |  | X |  |  |  |
|  | Operational Outcome 11 |  |  |  |  |  | X | X |  |
|  | Operational Outcome 12 |  |  |  |  |  |  | X | X |

# Master’s Program (M. Sc. Anthropology)

| PEO PLOs | | PEO 1 | | | PEO 2 | | PEO 3 | PEO 4 | PEO 5 | PEO 6 | PEO 7 | PEO 8 | PEO 9 | PEO 10 | PEO 11 | PEO 12 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Master’s Program** | | | | | | | |  |  |  |  |  |  |  |  |  |
| *B. Sc. (H) Anthropology* | | | | | | | |  |  |  |  |  |  |  |  |  |
|  | PLO1 | | X |  | | X | | X |  |  |  |  |  |  |  | X |
|  | PLO2 | | X | X | | X | | X | X | X | X | X | X | X |  | X |
|  | PLO3 | |  | X | | X | | X |  |  | X | X |  | X |  |  |
|  | PLO4 | | X | X | | X | | X |  | X |  | X |  | X | X | X |
|  | PLO5 | |  |  | |  | |  | X | X |  |  | X | X |  | X |
|  | PLO6 | | X |  | |  | |  |  | X |  | X |  |  |  | X |
|  | PLO7 | |  |  | |  | | X | X |  | X | X | X | X |  |  |
|  | PLO8 | |  |  | | X | | X | X | X | X | X | X | X |  | X |
|  | PLO9 | | X | X | | X | | X | X | X |  |  |  | X |  | X |
|  | PLO10 | | X | X | | X | | X | X |  |  | X | X | X | X |  |
|  | PLO11 | |  |  | | X | | X | X | X | X | X | X | X |  | X |
|  | PLO12 | | X | X | | X | | X | X |  |  | X | X | X | X | X |

| Operational  Goals  Operational  Outcomes | | OG1 | OG 2 | OG 3 | OG4 | OG5 | OG6 | OG7 | OG8 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Master’s Programs** | | | | |  |  |  |  |  |
| **B. Sc. (H) Anthropology** | | | | |  |  |  |  |  |
|  | Operational Outcome 1 | X | X | X |  |  |  |  |  |
|  | Operational Outcome 2 |  |  | X |  |  | X | X |  |
|  | Operational Outcome 3 | X | X | X |  |  |  |  |  |
|  | Operational Outcome 4 | X | X | X |  |  |  |  |  |
|  | Operational Outcome 5 |  | X |  |  | X |  |  |  |
|  | Operational Outcome 6 |  |  |  |  |  |  | X | X |
|  | Operational Outcome 7 |  | X |  |  |  | X | X |  |
|  | Operational Outcome 8 |  |  | X |  |  | X |  |  |
|  | Operational Outcome 9 |  |  |  | X | X |  |  |  |
|  | Operational Outcome 10 |  |  |  |  | X |  |  |  |
|  | Operational Outcome 11 |  |  |  |  |  | X | X |  |
|  | Operational Outcome 12 |  |  |  |  |  |  | X | X |

### **5.3 Programme–M.Sc. by Research in Microbial Biotechnology**

## **5.3.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide training and practical aspects of Microbial Biotechnology for solving the basic and applied microbiological problems relevant to health, agriculture, industry, and the environment |

## **5.3.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
| **Educational Goals** | |
|  | **PEO 1:** Student will develop the specialized theoretical and practical knowledge for microbial biotechnology |
|  | **PEO 2:**Student will identify problems and expertise in new concept development and create new understanding with relevance to environment, their sustainability and microbial biotechnological profession. |
|  | **PEO3:**Student will identify the opportunities and develop the scientific collaborations with international universities training, research, seminar and conferences |
|  | **PEO4:** Student will be able to integrate theory and practical applied research to develop research projects, processes and technologies. |
|  | **PEO 5:** Student will develop skills to make effective and appropriate communication in both professional and social contexts. |
|  | **PEO 6:**Student will demonstrate a capacity for self-management, team work, leadership and decision making based on open mindedness, objectivity and reasoned analysis in order to achieve goals |
|  | **PEO 7:** Students will be able to use and incorporate the modern analytical techniques in Microbial Biotechnology |
|  | **PEO 8:** Student will develop the understanding of ethical principles and codes of conduct of research related to science and to behave consistently with personal respect and commitment to ethical practice. |
|  | **PEO 9:** Student will apply sound planning and organizational skills to promote and contribute to the strategic planning of their enterprise or organization |
|  | **PEO 10:** Student will develop the skills to perceive the potential social/ scientific values |

**5.3.3 Programme Operational Objectives**

|  |  |
| --- | --- |
| **Operational Goals** | |
|  | The programmeM.Sc by Research intends to provide educational excellence in teaching/academic delivery. |
|  | The programmeM.Sc by Research will provide academically conducive environment for holistic development of students. |
|  | The programmeM.Sc by Research will facilitate environment for innovation and research excellence for the intellectual growth of faculty and students |
|  | The programmeM.Sc by Research will facilitate cultivation of core values of the university and ethical conduct amongst students, faculty and staff. |
|  | The programmeM.Sc by Research will encourage cultural diversity and a sense of social and environmental responsibility. |
|  | The programmeM.Sc by Research will provide ample opportunities for international exposure to faculty and students. |
|  | The programmeM.Sc by Research will formulate an alumni network and build strong relationship with industry while proactively seeking suggestions on curricula and training. |
|  | The programmeM.Sc by Research will facilitate opportunities for employment and also support students to start their own ventures. |
|  | The programmeM.Sc by Research will implement good governance in discharge of responsibilities and execution of policies and programs |

**5.3.4 Programme Learning Outcomes**

|  |  |
| --- | --- |
| **Intended Learning Outcomes** | |
|  | Students shall develop theoretical and practical knowledge in physiological and molecular aspects of microorganisms |
|  | Students shall apply theoretical knowledge in solving the problems of Microbial biotechnology and apply the practical experience in these fields for development of sustainable environmental technologies |
|  | Students shall be able to critically reflect and transform different approaches to generate new ideas, artifacts, products and interpretations of viewing professional projects. |
|  | Students shall be able to investigate problems using a range of different practical approaches and techniques to develop/ manage projects |
|  | Students shall be able to develop appropriate level of communication skills to effectively disseminate research and technical information |
|  | Students shall be able to demonstrate ability to work independently as individual and flexibility in a team with effectiveness and responsibility |
|  | Students shall be able to use and incorporate the modern analytical techniques in Microbial Biotechnology |
|  | Students shall develop ethical and cultural values in theory and practice. |
|  | Students shall be able to investigate problems using a range of different practical approaches and techniques to develop/ manage projects |
|  | The Student shall develop the lifelong learning to contribute to environment and society |
|  | Students shall apply theoretical knowledge in solving the problems of Microbial biotechnology and apply the practical experience in these fields for development of sustainable environmental technologies |
|  | The student shall integrate principals of Microbiology and biotechnology and implement them to handle various societal issues |

**5.3.5 Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Outcomes** | |
|  | The programmeM.Sc by Research will apply appropriate methodology and pedagogical tools for teaching, learning and development. |
|  | The curriculum will be relevant to research and industry requirements and benchmarked on global standards by incorporating feedback from all the stakeholders. |
|  | The student of M.Sc by Research will be graduated in the stipulated time period |
|  | University shall provide academic facilities, technological Resources for teaching and learning in the programmeM.Sc by Research |
|  | The student of M.Sc by Research will earn achievements in intra and inter-university Extra Curricular activities. |
|  | Faculty and students will be engaged in scholarly and professional activities in order to enhance their competencies and to contribute in the existing body of Knowledge. |
|  | The programmeM.Sc by Research will integrate ethics and values in teaching, theory and practice, develop and retain excellent students, faculty and staff |
|  | The programmeM.Sc by Research will facilitate cultivation of cultural and environmental conservation values among students |
|  | The programmeM.Sc by Research will facilitate joint research collaborations; invite international delegates and speakers for seminars and conferences and various other opportunities for global exposure |
|  | The programmeM.Sc by Research will develop and maintain strong relationship with industries for consultancies |
|  | The programmeM.Sc by Research will maintain alumni network and keep the curriculum responsive to industry needs |
|  | The programmeM.Sc by Researchwill support all the students for quality placements or join family business or start their own venture |
|  | The programmeM.Sc by Research shall establish an internal quality cell for operational quality and process improvement |

**5.3.6 Programme Educational Outcome Assessment for M.Sc. by Research in Microbial Biotechnology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **#** | **PEO’s** | **PLO’s** | **Direct** | **Tool\_No for Direct Assessment** | **Target Performance** | **Indirect** | **Tool\_No for Indirect Assessment** | **Target Performance** |
| 1 | Student will develop the specialized theoretical and practical knowledge for microbial biotechnology | Students shall develop theoretical and practical knowledge in physiological and molecular aspects of microorganisms | \*Comprehensive Exam | PG/PLO1/CE Framework | 80% students shall pass the exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey. |
| 2 | Student will identify problems and expertise in new concept development and create new understanding with relevance to environment, their sustainability and microbial biotechnological profession. | Students shall apply theoretical knowledge in solving the problems of Microbial biotechnology and apply the practical experience in these fields for development of sustainable environmental technologies | Bioanalytical techniques rubrics,  \*Comprehensive Exam | PG/PLO11 and 2/CE Framework | 100% students shall able to leverage IT in order to complete their Assignements and Projects | Student Exit Survey | PG/PLO/Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey. |
| 3 | Student will identify the opportunities and develop the scientific collaborations with international universities training, research, seminar and conferences | Students shall be able to critically reflect and transform different approaches to generate new ideas, artifacts, products and interpretations of viewing professional projects. | \*Comprehensive Exam | PG/PLO3/CE Framework | 80% students shall able to demonstrate Problem Solving and Decision Making Skill | Student Exit Survey | PG/PLO/Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey. |
|  |
| 4 | Student will be able to integrate theory and practical applied research to develop research projects, processes and technologies. | Students shall be able to investigate problems using a range of different practical approaches and techniques to develop/ manage projects | Term paper, Summer Internship, Dissertation rubrics, viva-voce | PG/PLO4 and 9/Dissertation | 100% Students will undertake and complete the dissertation | Feedback of Industry Internship Guide | PG/PLO/Exit Survey | The Industry Internship Guide rates the students between 4-5 range on the Likert Scale in the feedback. |
| \*Comprehensive Exam |
| 5 | Student will develop skills to make effective and appropriate communication in both professional and social contexts. | Students shall be able to develop appropriate level of communication skills to effectively disseminate research and technical information | \*Comprehensive Exam | PG/PLO5/CE Framework | 100 % students will elaborate their research findings through presentations and will defend the viva voce | Student Exit Survey | PG/PLO/Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey. |
| 6 | Student will demonstrate a capacity for self-management, team work, leadership and decision making based on open mindedness, objectivity and reasoned analysis in order to achieve goals | Students shall be able to demonstrate ability to work independently as individual and flexibility in a team with effectiveness and responsibility | Rubrics Bioanalytical techniques | PG/PLO6/CE Frame work | 100% students' participation in term papers and project report preparation. | Student Exit Survey | PG/PLO/Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey. |
| 7 | Students will be able to use and incorporate the modern analytical techniques in Microbial Biotechnology | Students shall be able to use and incorporate the modern analytical techniques in Microbial Biotechnology | Dissertation rubrics | PG/PLO7/CE Famework | 100% Students will undertake and complete the dissertation | Feedback of Industry Internship Guide | PG/PLO/Exit Survey | The Industry Internship Guide rates the students between 4-5 range on the Likert Scale in the feedback. |
| 8 | Student will develop the understanding of ethical principles and codes of conduct of research related to science and to behave consistently with personal respect and commitment to ethical practice. | Students shall develop ethical and cultural values in theory and practice. | Plagiarism Checking of Dissertation,  \*Comprehensive Exam | PG/PLO8/CE Framework | 100% students are cheched for plagiarism in NTCC report submission and are allowed to appear for viva-voce upon obtaining plagiarism % below 15% | Feedback of Industry Internship Guide | PG/PLO/Exit Survey | The Industry Internship Guide rates the students between 4-5 range on the Likert Scale in the feedback. |
| Indiscipline Cases |
| The University will adhere to zero tolerance toward use of unfair means |
| 9 | Student will apply sound planning and organizational skills to promote and contribute to the strategic planning of their enterprise or organization | The Student shall develop the lifelong learning to contribute to environment and society | \*Term paper, viva-voice,  \* Rubrics (Dissertation),  \*Comprehensive Exam | PG/PLO10/CE Frame work | 100% students' submit the research report and 50% students should secure a grade of 6 and above on a 10-point scale. | Student survey  Alumni Survey | PG/PLO/Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey. |
| 10 | Student will develop the skills to perceive the potential social/ scientific values | The student shall integrate principals of Microbiology and biotechnology and implement them to handle various societal issues | \*Comprehensive Exam | PG/PLO12/CE Framework | 100% students submit the research report and 50% students should secure a grade of 6 and above on a 10-point scale. | Student Exit Survey | PG/PLO/Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey. |
|  |  |

## **5.3.7 Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)**

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| (PEOs) (PLOs) |  |  | PEO 1 | PEO 2 | PEO 3 | PEO 4 | PEO 5 | PEO 6 | PEO 7 | PEO 8 | PEO 9 | PEO 10 |
| **bachelor’s/ Master’s Level Programs** | | | | | | | | | | | | |
| *Name of the programme* | | | | | | | | | | | | |
|  | Learning Outcome 1 | | √ |  |  |  |  |  |  |  |  |  |
|  | Learning Outcome 2 | |  | √ |  |  |  |  |  |  |  |  |
|  | Learning Outcome 3 | |  |  | √ |  |  |  |  |  |  |  |
|  | Learning Outcome 4 | |  |  |  | √ |  |  |  |  |  |  |
|  | Learning Outcome 5 | |  |  |  |  | √ |  |  |  |  |  |
|  | Learning Outcome 6 | |  |  |  |  |  | √ |  |  |  |  |
|  | Learning Outcome 7 | |  |  |  |  |  |  | √ |  |  |  |
|  | Learning Outcome 8 | |  |  |  |  |  |  |  | √ |  |  |
|  | Learning Outcome 9 | |  |  |  | √ |  |  |  |  |  |  |
|  | Learning Outcome 10 | |  |  |  |  |  |  |  |  | √ |  |
|  | Learning Outcome 11 | |  | √ |  |  |  |  |  |  |  |  |
|  | Learning Outcome 12 | |  |  |  |  |  |  |  |  |  | √ |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | Operational Gols | | Operational Outcomes | | OG1 | OG2 | OG3 | OG4 | OG5 | OG6 | OG7 | OG8 | OG9 |
| **Master’s Level Programs** | | | | | | | | | |
| *Name of the programme* | | | | | | | | | |
| Operational Outcome 1 | √ |  |  |  |  |  |  |  |  |
| Operational Outcome 2 | √ |  |  |  |  |  |  |  |  |
| Operational Outcome 3 |  | √ |  |  |  |  |  |  |  |
| Operational Outcome 4 |  |  | √ |  |  |  |  |  |  |
| Operational Outcome 5 |  | √ |  |  |  |  |  |  |  |
| Operational Outcome 6 | √ |  |  |  |  |  |  |  |  |
| Operational Outcome 7 |  |  |  | √ |  |  |  |  |  |
| Operational Outcome 8 |  |  |  |  | √ |  |  |  |  |
| Operational Outcome 9 |  |  |  |  |  | √ |  |  |  |
| Operational Outcome 10 |  |  |  |  |  |  | √ |  |  |
| Operational Outcome 11 |  |  |  |  |  |  | √ |  |  |
| Operational Outcome 12 |  |  |  |  |  |  |  | √ |  |
| Operational Outcome 13 |  |  |  |  |  |  |  |  | √ |

### **5.4 Programme – B.Sc. (H) Microbiology**

## **5.4.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| “To provide basic education in the area of Microbiology, related areas of applied science, humanity related areas and in the Futuristic and emerging frontier areas of knowledge, learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong yearning for perfection and imbibe attributes of courage of conviction and action”. |

## **5.4.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
| **Educational Goals** | |
|  | The student shall be able to develop knowledge and skills to integrate principles of Microbiology and allied areas to achieve academic excellence |
|  | The student shall demonstrate research skills and conduct innovative research in thrust areas benefitting society which will enhance the intellectual capital in the area of Microbiology. |
|  | The student of AIMT shall be able to use and apply latest IT tools to analyze and interpret scientific data. |
|  | The student shall be able to comprehend and interpret research in Microbiology and related areas in order to solve scientific problems |
|  | The student shall be able to develop effective communication skills to enhance interpersonal relationship. |
|  | The student shall be able to develop leadership and entrepreneurial skills and perform responsibly as an individual as well as in a team while maintaining accountability and output. |
|  | The student shall be able to develop global citizenship skills to build a sustainable world |
|  | The student shall demonstrate ethical behaviour and develop sensitivity towards coastal environment and culturally sensitive issues of the society. |
|  | The student shall develop networking skills and build a strong network with the industry and alumni |
|  | The students of shall be able to evaluate and reflect habit of lifelong learning.. |
|  | The student shall be able to recognize the need for environmental conservation and develop sustainable technologies |
|  | The student of AIMT shall be able to integrate various aspects of learning and achieve holistic development |

**5.4.3 Programme Operational Objectives**

|  |  |
| --- | --- |
| **Operational Goals** | |
| 1 | Program will **create** appropriate teaching learning resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students |
| 2 | Program will **provide** Professional development opportunities to the faculty and staff   to regularly upgrade their  knowledge and skills and bring excellence in teaching, learning and research |
| 3 | Program will  **demonstrate** sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| 4 | Program will continuously strive **to build** strong industry interaction, alumni networks and empanelment of expertise from industry |
| 5 | Program will continually **improve** the quality of facilities, services, resources and processes with an aim to attain **national** and international accreditations and institutional ranking. |
| 6 | Program will **arrange all necessary** support system for the students of all the programs to facilitate campus recruitment, higher education or starting their own ventures. |
| 7 | Program will **act** ethically to ensure transparency and good governance **while discharging** various  responsibilities to its  stakeholders and execution of policies and programs |
| 8 | Program will **create** opportunities forinternational exposure for its students and faculty. |

**5.4.4 Programme Learning Outcomes**

|  |  |
| --- | --- |
| Intended Learning Outcomes | |
|  | Student will be able to demonstrate and understanding of the various components of Microbiology with Fundamental knowledge of Basic Science and Applied Science. |
|  | Student will be able to outline the problem on the basis of principles of Microbiology and Basic Science. |
|  | Student will be able to show skills for practical solution in the area of Microbiology. |
|  | Student will be able to recite new knowledge and opportunities for leaning through the process of research and enquiry. |
|  | Student will be able to demonstrate skills in explaining clearly, communicating in a team, presenting to a growth. |
|  | Student will use skills for working independently as well as team to achieve goals. |
|  | Student will be able to use and apply appropriate tools, techniques and resources for understanding of the Microbiology. |
|  | Student will be able to state ethical reasoning and ethical issues associated with current Microbiology Research. |
|  | Students will be able to apply skills to plan, execute and conclude a research project in the area of Microbiology. |
|  | Student will identify the need to engage in independent and life long leaning in the context of scientific development in the area of Marine Science. |
|  | Student will be able to apply knowledge gained for the environmental conservation and restoration with sustainable development. |
|  | Student will be able to define social structure, issues and the solutions by the knowledge from humanity related subjects. |

**5.4.5 Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Outcomes** | |
| 1 | Program will promote use of appropriate methodology and pedagogical tools for teaching, learning and development. |
| 2 | The curriculum will be contemporary and relevant to meet research and industry requirements and benchmarked on global standards by incorporating feedback from all the stakeholders. |
| 3 | The student of AIMT will graduate in the stipulated time period |
| 4 | Program will provide academic facilities, technological Resources for teaching and learning at AIMT |
| 5 | The student of AIMT will earn achievements in intra and inter-university Extra Curricular activities. |
| 6 | Faculty and students will be engaged in scholarly and professional activities in order to enhance their competencies and to contribute to the existing body of Knowledge. |
| 7 | Program will integrate ethics and values in teaching, theory and practice, develop and retain excellent students, faculty and staff. |
| 8 | Program will facilitate cultivation of cultural and environmental conservation values among students. |
| 9 | Program shall develop and maintain strong relationship with research institutes, alumni and industry. |
| 10 | Program will facilitate joint research collaborations; invite international delegates and speakers for seminars and conferences and various other opportunities for global exposure and will support all the students for quality placements or join family business or start their own venture |
| 12 | Program will establish an internal quality cell for operational quality and process improvement. |

**5.4.6 Programme Educational Outcome Assessment for B.Sc. (H) Microbiology**

| **Sl. No.** | **PEO’s** | **PLO’s** | **Direct** | **Tool No for Direct Assessment** | **Target Performance** | **Indirect** | **Tool\_No for Indirect Assessment** | **Target Performance** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | The student shall be able to **develop** the basic knowledge and skills to integrate principles of Microbiology to achieve academic excellence | The student will **define** and **summarize** basic concepts of Microbiology | Comprehensive Exam | UG/PLO1/CE Framework | 80% students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey |
| 2 | The student shall be able to **develop** various aspects of learning and achieve holistic development | The student will **develop** various aspects of learning to meet research and industry requirements benchmarked on global standards | Term Paper, Summer Internship, Viva-voce  Comprehensive Exam | UG/PLO2/Dissertation  UG/PLO2/CE Framework | 100% students will undertake and complete the Internship | Feedback of  Internship Guide | UG/PLO/Exit Survey | The Internship Guide rates the students between 4-5 range on the Likert Scale in the feedback |
| 3 | The student shall be able to **develop** intellectual capital by conducting research & development using modern methods/tools of microbiology | The student will **use** various modern tools and techniques to **develop** intellectual capital by conducting research | Comprehensive Exam | UG/PLO3/CEFramework | 100% students shall able to use modern microbiological tools in order to complete their research project | Student Exit Survey | UG/PLO/Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey |
| 4 | The student shall be able to **develop** research capability by performing research based project work | The student will **develop** new knowledge through experimental methods | Comprehensive Exam | UG/PLO4/CE Framework | 100% students will undertake and complete the research based project work | Student Exit Survey | UG /PLO/Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey |
| 5 | The student shall be able to **develop** core values of the university and demonstrate ethical conduct | The student will **develop** ethical code of conduct | Plagiarism Checking of Dissertation  Comprehensive Exam | UG/PLO5/ CE Framework | 100% NTCC reports will be checked for plagiarism which should return similarity index below 15%. | Student Exit Survey | UG /PLO/Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey |
| 6 | The student shall be able to **interpret** cultural diversity and the consequent responsibilities in relation to the society and environment. | The student will **interpret** cultural diversity and develop responsibility for society and environment | Behavioural Science course result of all semesters | UG/PLO6/BS | 80% students would secure a grade of 6 and above on a 10 point scale in the Journal for Success Component of BS | Student Exit Survey | UG /PLO/Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey |
| 7 | The student be able to shall be able to **develop** networking skills and establish links with industries and alumni | The student will **develop** links with Alumni and Industry | Comprehensive Exam | UG/PLO7/ CE Framework | 100% students’ participation in self work component | Student Exit Survey | UG /PLO/Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey |
| 8 | The student shall be able to **interpret** taught concepts to design and undertake practical and professional work | The student will **explain** the taught concepts in employment and entrepreneurship | Comprehensive Exam | UG/PLO7/ CE Framework | 100% students' participation in project report preparation | Student Exit Survey | UG /PLO/Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey |
| 9 | The student shall be able to **apply** good governance, in terms of value addition and functioning. | The student will **apply** principles of good governance and perform effectively individually and as a team member | Comprehensive Exam | UG/PLO7/ CE Framework | 100% NTCC reports will be checked for plagiarism which should return similarity index below 15%. | Student Exit Survey  In disciplinary Cases | UG /PLO/Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey  Zero tolerance towards use of unfair means |
| 10 | The student shall be able to **develop** the habit of lifelong learning. | The student will **develop** the habit of lifelong learning | Comprehensive Exam | UG/PLO7/ CE Framework | 100% students submit the research report and 50% students should secure a grade of 6 and above on a 10-point scale | Student Exit Survey | UG /PLO/Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey |
| 11 | The student shall be able to **apply** scientific skills to implement translational approaches | The student will be able to **use** scientific values to **develop** learning outcomes | Comprehensive Exam | UG/PLO7/ CE Framework | 100% students’ participation in self work component | Student Exit Survey | UG /PLO/Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey |
| 12 | The student shall be able to **develop** learning outcomes for further enhancement of knowledge | The student will be able to **apply** learning practices to **develop** experimentation approachto implement knowledge | Comprehensive Exam | UG/PLO7/ CE Framework | 100% students’ participation in self work component | Student Exit Survey | UG /PLO/Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey |

## **5.4.7 Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational** **Objectives (PEOs)**

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

| (PEOs)  PLOs | | PEO 1 | PEO 2 | PEO 3 | PEO4 | PEO5 | PEO6 | PEO7 | PEO8 | PEO9 | PEO10 | PEO11 | PEO12 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **bachelor’s Level Programs – B.Sc. (H) Microbiology** | | | | |  |  |  |  |  |  |  |  |  |
| Name of the programme | | | | |  |  |  |  |  |  |  |  |  |
|  | Learning Outcome 1 | √ | √ | √ |  |  |  | √ | √ |  |  |  |  |
|  | Learning Outcome 2 | √ |  |  | √ | √ |  |  |  | √ | √ |  |  |
|  | Learning Outcome 3 |  | √ |  |  |  |  |  |  |  |  | √ | √ |
|  | Learning Outcome 4 |  |  | √ |  |  |  |  | √ | √ |  |  |  |
|  | Learning Outcome 5 | √ |  |  |  | √ | √ |  |  |  |  |  |  |
|  | Learning Outcome 6 |  |  | √ |  |  |  | √ | √ |  |  |  |  |
|  | Learning Outcome 7 | √ |  |  |  |  |  |  | √ | √ |  |  |  |
|  | Learning Outcome 8 | √ | √ |  | √ | √ |  |  |  |  |  |  |  |
|  | Learning Outcome 9 | √ |  |  |  |  |  |  |  | √ | √ |  |  |
|  | Learning Outcome 10 |  | √ | √ |  | √ | √ |  |  |  |  | √ | √ |
|  | Learning Outcome 11 | √ |  | √ |  |  |  |  | √ | √ |  |  |  |
|  | Learning Outcome 12 | √ | √ | √ |  |  |  |  |  | √ | √ |  |  |

### **5.5 Programme – M.Sc. Microbiology**

## **5.5.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide education at all levels in all disciplines of microbiology and in the futuristic and emerging frontier areas of knowledge, learning, and research and to develop the overall personality of students by making them not only excellent professional but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong and yearning for perfection and imbibe attributes of courage of conviction and action. |

## **5.5 .2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
| **Educational Goals** | |
|  | The student shall be able to **demonstrate** the advanced knowledge and skills to integrate principles of microbiology to achieve academic excellence |
|  | The student shall be able to **use** various aspects of learning and achieve holistic development |
|  | The student shall be able to **demonstrate** intellectual capital by conducting independent research & development using modern methods/tools of microbiology |
|  | The student shall be able to **demonstrate** research capability by performing research based project work/dissertation in national and international microbiology laboratories of repute |
|  | The student shall be able to **demonstrate** core values of the university and ethical conduct |
|  | The student shall be able to **interpret** cultural diversity and the consequent responsibilities in relation to the society and environment |
|  | The student shall be able to **demonstrate** networking skills and establish links with industries and alumni |
|  | The student shall be able to **interpret** taught concepts to design and undertake practical and professional work thereby improving employment and entrepreneurial skills |
|  | The student shall be able to **apply** good governance, in terms of value addition and functioning |
|  | The student shall be able to **evaluate** and reflect the habit of lifelong learning |
|  | The student shall be able to **apply** scientific skills to implement translational approaches |
|  | The student shall be able to **develop** learning outcomes for further enhancement of knowledge |

**5.5.3 Programme Operational Objectives**

|  |  |
| --- | --- |
| **Operational Goals** | |
| 1 | This programme intends to provide educational excellence in teaching/academic delivery |
| 2 | This programme will provide academically conducive environment for holistic development of students |
| 3 | This programme will facilitate environment for innovation and research excellence for the intellectual growth of faculty and students |
| 4 | This programme will facilitate cultivation of core values of the university and ethical conduct amongst students, faculty and staff |
| 5 | This programme will encourage cultural diversity and a sense of social and environmental responsibility |
| 6 | This programme will provide opportunities for international collaborations and exposure to faculty and students |
| 7 | This programme will proactively build strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training |
| 8 | The Programme will facilitate employment opportunities and also support students to start their own ventures |
| 9 | The Programme will facilitate good governance in discharge of responsibilities and execution of policies and programmes |

**5.5. 4 Programme Learning Outcomes**

|  |  |
| --- | --- |
| **Intended Learning Outcomes** | |
| 1 | The student will be able to **demonstrate** and **apply** concepts of Microbiology in multi-disciplinary context and critically **analyze** microbiological principles in biosciences and biotechnology |
| 2 | The student will be able to **use** various aspects of learning to meet research and industry requirements benchmarked on global standards |
| 3 | The student will be able to **use** various modern tools and techniques to **demonstrate** intellectual capital by conducting independent research |
| 4 | The student will be able to **apply** new knowledge through experimental methods, Ability to identify, define, investigate, and **analyze** the experimental data, and interpret results for driving optimum solutions |
| 5. | The student will be able to **demonstrate** ethical code of conduct |
| 6 | The student will be able to **interpret** cultural diversity and develop responsibility for society and environment |
| 7 | The student will be able to **develop** links with alumni and industry |
| 8 | The student will be able to **apply** the taught concepts in employment and entrepreneurship |
| 9 | The student will be able to **apply** principles of good governance and perform effectively, individually and as a team member |
| 10 | The student will be able to **demonstrate** the habit of lifelong learning |
| 11 | The student will be able to **use** scientific values to **develop** learning outcomes |
| 12 | The student will be able to **apply** learning practices to **develop** experimentation approachto implement knowledge |

**5.5.5 Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Outcomes** | |
| 1 | The programme will **select** appropriate methodology and pedagogical tools for teaching, learning and development |
| 2 | The programme will be **assessed** in a relevant manner to meet research and industry requirements and benchmarked on global standards by incorporating feedback from all the stakeholders |
| 3 | The programme will **organize** research internship and dissertation for innovation and intellectual growth of faculty and students |
| 4 | The student of programme will **apply** the achievements at intra and inter-university level of extra-curricular activities |
| 5 | The programme will **adapt** value added courses and environmental microbiology as a part of academic curriculum |
| 6 | The programme will **identify** opportunities for research collaborations and invite international delegates and speakers for seminars and conferences and various other opportunities for global exposure |
| 7 | The programme will effectively **demonstrate** and maintain strong relationship with research and academic institutes for joint collaborative research and consultancies in the field of Microbiology |
| 8 | This programme will **identify** students to obtain practical experience and knowledge to get employment or start their own ventures |
| 9 | The programme will **devise** good governance practices among faculty, students and staff |

**5.5.6 Programme Educational Outcome Assessment for M.Sc. Microbiology**

| **Sl. No.** | **PEO’s** | **PLO’s** | **Direct** | **Tool No for Direct Assessment** | **Target Performance** | **Indirect** | **Tool No for Indirect Assessment** | **Target Performance** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | The student shall be able to **demonstrate** the advanced knowledge and skills to integrate principles of Microbiology to achieve academic excellence | The student will **demonstrate** and **apply** concepts of Microbiology in multi-disciplinary context and critically **analyze** microbiological principles in biosciences and biotechnology | Comprehensive Exam | PG/PLO/  CE Framework | 80% students shall pass the exam | Student Exit Survey | PG/PLO/  Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey |
| 2 | The student shall be able to **use** various aspects of learning and achieve holistic development. | The student will **use** various aspects of learning to meet research and industry requirements and benchmarked on global standards | Self Work Summer Internship, Dissertation | PG/PLO/  Dissertation | 100% students will undertake and complete the dissertation | Feedback of Industry Internship Guide | PG/PLO/  Exit Survey | The Industry Internship Guide rates the students between 4-5 range on the Likert Scale in the feedback. |
| 3 | Students shall be able to **demonstrate** intellectual capital by conducting independent research & development using modern methods/tools of microbial technology | The student will **use** various modern tools and techniques to **demonstrate** intellectual capital by conducting independent research | Summer Internship, Dissertation, Viva-voce  Comprehensive Exam | PG/PLO/  Dissertation  PG/PLO/CE Framework | 100% students will undertake and complete the dissertation | Feedback of Industry Internship Guide | PG/PLO/  Exit Survey | The Industry Internship Guide rates the students between 4-5 range on the Likert Scale in the feedback. |
| 4 | The student shall be able to **demonstrate** research capability by performing research based project work/dissertation in national and international microbiology laboratories of repute | The student will **apply** new knowledge through experimental methods, Ability to identify, define, investigate, and **analyze** the experimental data, and interpret results for driving optimum solutions | Bio-analytical techniques  Comprehensive Exam | PG/PLO/CE Framework | 100% students shall be able to demonstrate microbiological tools in order to complete their research project | Student Exit Survey | PG/PLO/  Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey |
| 5 | The student shall be able to **demonstrate** core values of the university and demonstrate ethical conduct | The student will **demonstrate** ethical code of conduct | Comprehensive Exam | PG/PLO/CE Framework | 100% NTCC reports will be checked for plagiarism which should return similarity index below 15%. | Student Exit Survey | PG/PLO/  Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey |
| 6 | The student shall be able to **interpret** cultural diversity and the consequent responsibilities in relation to the society and environment. | The student will **interpret** cultural diversity and develop responsibility for society and environment | Communication skills  Comprehensive Exam | PG/PLO5/ BC  PG/PLO/CE Framework | 80% students should secure a grade of 6 and above on a 10-point scale in the presentation component of communication skills course | Student Exit Survey | PG/PLO/  Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey. |
| 7 | The student shall be able to **demonstrate** networking skills and establish links with industries and alumni | The student will **plan** links with alumni and industry. | Behavioural Science Course Result of all semesters  Comprehensive Exam | PG/PLO/BS  PG/PLO/CE Framework | 80% students should secure a grade of 6 and above on a 10-point scale in the Journal for Success component of Behavioural Science course | Student Exit Survey | PG/PLO/  Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey. |
| 8 | The student shall be able to **interpret** taught concepts to design and undertake practical and professional work thereby improving employment and entrepreneurial skills. | The student will **apply** the taught concepts in employment and entrepreneurship | Bio-analytical techniques    Comprehensive Exam | PG/PLO/CE Framework | 100% students' participation in term papers and project report preparation. | Student Exit Survey | PG/PLO/  Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey. |
| 9 | The student shall be able to **apply** good governance, in terms of value addition and functioning | The student will **apply** principles of good governance and perform effectively individually and as a team member | Plagiarism Checking of Dissertation  Comprehensive Exam | PG/PLO/CE Framework | 100% NTCC reports will be checked for plagiarism which should return similarity index below 15%. | Feedback of Industry  Internship Guide  Indiscipline Cases | PG/PLO/  Exit Survey | The Industry Internship Guide rates the students between 4-5 range on the Likert Scale in the feedback.  Zero tolerance towards use of unfair means |
| 10 | The student shall be able to **evaluate** and reflect the habit of lifelong learning. | The student will **demonstrate** the habit of lifelong learning | Viva-voce , Dissertation  Comprehensive Exam | PG/PLO/  Disssertation  PG/PLO/CE Framework | 100% students submit the research report and 50% students should secure a grade of 6 and above on a 10-point scale | Student Exit Survey | PG/PLO/  Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey |
| Mentors will assess the Learning curve of 100% students | Student Exit Survey | PG/PLO/  Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Alumni Survey |
| 100 % students will elaborate their research findings through presentations and will defend the viva voce | Student Exit Survey | PG/PLO/  Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey. |
| 11 | The student shall be able to **apply** scientific skills to implement translational approaches | The student will be able to **use** scientific values to **develop** learning outcomes | Comprehensive Exam | UG/PLO7/ CE Framework | 100% students’ participation in self work component | Student Exit Survey | UG /PLO/Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey |
| 12 | The student shall be able to **develop** learning outcomes for further enhancement of knowledge | The student will be able to **apply** learning practices to **develop** experimentation approachto implement knowledge | Comprehensive Exam | UG/PLO7/ CE Framework | 100% students’ participation in self work component | Student Exit Survey | UG /PLO/Exit Survey | 80% students’ response range between 4-5 on the Likert Scale in the Student Exit Survey |

## **5.5. 7 Mapping of Intended Programme Learning Outcomes to Broad-Based Programme** **Educational Objectives (PEOs)**

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

| (PEOs)  PLOs | | PEO 1 | PEO 2 | PEO 3 | PEO4 | PEO5 | PEO6 | PEO7 | PEO8 | PEO9 | PEO10 | PEO11 | PEO12 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MASTER’s Level Programs –**  **M.Sc. Microbiology** | | | | |  |  |  |  |  |  |  |  |  |
| Name of the programme | | | | |  |  |  |  |  |  |  |  |  |
|  | Learning Outcome 1 | √ | √ | √ |  |  |  | √ | √ |  |  |  |  |
|  | Learning Outcome 2 | √ |  |  | √ | √ |  |  |  | √ | √ |  |  |
|  | Learning Outcome 3 |  | √ |  |  |  |  |  |  |  |  | √ | √ |
|  | Learning Outcome 4 |  |  | √ |  |  |  |  | √ | √ |  |  |  |
|  | Learning Outcome 5 | √ |  |  |  | √ | √ |  |  |  |  |  |  |
|  | Learning Outcome 6 |  |  | √ |  |  |  | √ | √ |  |  |  |  |
|  | Learning Outcome 7 | √ |  |  |  |  |  |  | √ | √ |  |  |  |
|  | Learning Outcome 8 | √ | √ |  | √ | √ |  |  |  |  |  |  |  |
|  | Learning Outcome 9 | √ |  |  |  |  |  |  |  | √ | √ |  |  |
|  | Learning Outcome 10 |  | √ | √ |  | √ | √ |  |  |  |  | √ | √ |
|  | Learning Outcome 11 | √ |  | √ |  |  |  |  | √ | √ |  |  |  |
|  | Learning Outcome 12 | √ | √ | √ |  |  |  |  |  | √ | √ |  |  |

### 

### **5.6 Programme – B.Sc (H) Marine Science**

## **5.6.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| “To provide basic education in the area of Marine Science, applied science, industry relevant knowledge and to develop the overall personality of students by making them not only technically equipped professionals but also good individuals with a sense of right and wrong, yearning for perfection and imbibe attributes of courage of conviction and action”. |

## **5.6.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
| **Educational Goals** | |
|  | PEO 1:The student shall be able to develop knowledge and skills to integrate principles of Marine science and allied areas to achieve academic excellence | |
|  | PEO 2: The student shall demonstrate technical skills to conduct innovative societal or industry relevant research in the area of marine science. | |
|  | PEO 3: The student shall be able to use and apply latest IT tools for data analytics. | |
|  | PEO 4: The student shall be able to implement scientific knowledge and technical approach in order to solve problems in the area of aquaculture, fisheries, climate or any other related areas. | |
|  | PEO 5: The student shall be able to develop effective communication skills to enhance Interpersonal relationship. | |
|  | PEO 6: The student shall be able to develop leadership and entrepreneurial skills and perform responsibly as an individual as well as in a team with accountability and output. | |
|  | PEO 7: The student shall be able to develop ability to grow with global trends and to build a sustainable world | |
|  | PEO 8: The student shall demonstrate ethical behaviour and develop sensitivity towards coastal environment and culturally sensitive issues of the society. | |
|  | PEO 9: The student shall build a strong network with the industry and alumni in terms of technical knowledge and other opportunities. | |
|  | PEO 10: The student shall be able to experience lifelong learning. | |
|  | PEO 11:The student shall be able to understand the environmental issues and to develop sustainable techniques for conservation | |
|  | PEO 12: The student shall be able to integrate various aspects of learning and achieve holistic development and be ready for industry 4.0 | |

**5.6.3 Programme Operational Objectives**

|  |  |
| --- | --- |
| **Operational Goals** | |
| 1 | B.Sc. (H) Marine Science will create appropriate teaching learning resources, infrastructure and conducive environment to fulfil requirement of education 4.0 for excellence in teaching, learning, research and professional development of students |
| 2 | Program will formulate professional development opportunities to the faculty and staff to regularly upgrade their knowledge and skills to make teaching-learning research oriented |
| 3 | Program will develop sensitivity to handle the diverse needs of society and accordingly develop facilities and services |
| 4 | Program will operate to build strong industry interaction, alumni networks and empanelment of expertise from industry |
| 5 | Program will enhance the quality in academics with an aim to attain national and international accreditations and institutional ranking. |
| 6 | Program will arrange all necessary support system to increase the employability, higher education or to start own ventures by the students. |
| 7 | Program will follow ethics to ensure transparency, good governance and fair practices. |
| 8 | Program will provide opportunities for international exposure for its students and faculty. |

**5.6.4 Programme Learning Outcomes**

|  |  |
| --- | --- |
| Intended Learning Outcomes | |
| PLO 1 | PLO 1 Student will be able to define various components of Marine Science. |
| PLO 2 | Student will be able to identify problems in the area of marine science and related fields. |
| PLO 3 | The student will be able to apply modern IT tools, IOT, cloud, data analytics etc. for acquisition and analysis of biological data. |
| PLO 4 | Student will be able to implement new technologies, knowledge and opportunities for leaning through the process of research and enquiry. |
| PLO 5 | Student will be able to formulate effective strategy for the dissemination of the information for further implementation. |
| PLO 6 | Student will be able to develop qualities to achieve goals as individual or as a team. |
| PLO 7 | The student will build skills to evolve into a responsible global citizen. |
| PLO 8 | Student will be able to support ethics in marine Science Research. |
| PLO 9 | Student will be able to apply industry 4.0 skills along with other skill sets to plan, execute and conclude a research project in the area of Marine Science |
| PLO 10 | Student will identify the need to engage in independent and life long leaning in the context of scientific development in the area of Marine Science. |
| PLO 11 | Student will be able to apply knowledge gained for the environment, ecosystem, conservation and restoration to achieve sustainable developmen**t.** |

**5.6.5 Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Outcomes** | |
| 1 | Program will promote use of appropriate methodology and pedagogical tools for teaching, learning and development. |
| 2 | The curriculum will be contemporary and relevant to meet research and industry requirements and benchmarked on global standards by incorporating feedback from all the stakeholders. |
| 3 | The student of AIMSTwill graduate in the stipulated time period |
| 4 | University shall provide academic facilities, technological Resources for teaching and learning at AIMST |
| 5 | The student of AIMST will earn achievements in intra and inter-university Extra Curricular activities. |
| 6 | Faculty and students will be engaged in scholarly and professional activities in order to enhance their competencies and to contribute to the existing body of Knowledge. |
| 7 | AIMST will integrate ethics and values in teaching, theory and practice, develop and retain excellent students, faculty and staff. |
| 8 | AIMST will facilitate cultivation of cultural and environmental conservation values among students. |
| 9 | AIMST shall develop and maintain strong relationship with research institutes, alumni and industry. |
| 10 | AIMST will facilitate joint research collaborations; invite international delegates and speakers for seminars and conferences and various other opportunities for global exposure and will support all the students for quality placements or join family business or start their own venture |
| 11 | AIMST shall establish an internal quality cell for operational quality and process improvement. |

**5.6.6 Student Learning Assessment for B. Sc.(H) Marine Science**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **#** | **PEO’s** | **PLO’s** | **Direct** | **Tool No for Direct Assessment** | **Target Performance** | **Indirect** | **Tool\_No for Indirect Assessment** | **Target Performance** |
| 1 | The student shall be able to develop knowledge and skills to integrate principles of Marine science and allied areas to achieve academic excellence | PLO1, 2,4, &9 | \*Comprehensive Exam | UG/PLO1/CE Framework | 70% students shall pass the exam. | Student Exit Survey | UG/PLO/Exit Survey | 80% students response range between 4-5 on the Likert Scale in the Student Exit Survey. |
| 2 | The student shall demonstrate technical skills to conduct innovative societal or industry relevant research in the area of marine science. | PLO1, 2,4, &9 | Comprehensive exam  Project/dissertation | UG/PLO2/TP/SI/VV  UG/PLO1/CE Framework | 100% students will undertake and complete the dissertation | Feedback industry internship guide |  | The Industry Internship Guide rates the students between 4-5 range on the Likert Scale in the feedback. |
| 3 | The student shall be able to use and apply latest IT tools for data analytics. | PLO1, 2,3, 4, &9 | \*Comprehensive Exam | UG/PLO3/CE Framework | 100% students shall able to leverage IT in order to complete their Assignments and Projects | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to implement scientific knowledge and technical approach in order to solve problems in the area of aquaculture, fisheries, climate or any other related areas. | PLO1, 2,3, 4, &9 | \* Rubrics  \*Comprehensive Exam | UG/PLO4/  UG/PLO3/CE Framework | 80% students shall able to demonstrate Problem Solving and Decision Making Skill | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey.. |
| 5 | The student shall be able to develop effective communication skills to enhance Interpersonal relationship. | PLO4,5&6 | \*Rubrics (Communication skills)  \*Comprehensive Exam | UG/PLO5/ C  UG/PLO3/CE Framework | 80% students should secure a grade of 6 and above on a 10-point scale in the presentation component of communication course. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey.. |
| 6 | The student shall be able to develop leadership and entrepreneurial skills and perform responsibly as an individual as well as in a team with accountability and output. | PLO6 | \*Rubrics  \*Comprehensive Exam | UG/PLO6/  UG/PLO3/CE Framework | 80% students should secure a grade of 6 and above on a 10-point scale in the Journal for Success component of Behavioural Science course. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 7 | The student shall be able to develop ability to grow with global trends and to build a sustainable world | PLO5,7&11 | rubrics  \*Comprehensive Exam | UG/PLO7/  UG/PLO3/CE Framework | 100% students' participation in term papers and project report preparation. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 8 | The student shall demonstrate ethical behaviour and develop sensitivity towards coastal environment and culturally sensitive issues of the society. | PLO 1,2,8&11 | \*Plagiarism Checking of project  Rubrics (Behavioural Science) |  | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Feedback industry internship guide |  | The Industry Internship Guide rates the students between 4-5 range on the Likert Scale in the feedback. |
| 9 | The student shall build a strong network with the industry and alumni in terms of technical knowledge and other opportunities. | PLO7 | Rubrics (Behavioural Science)  \*Comprehensive Exam | UG/PLO9/  UG/PLO9/CE Framework | 100% students submit the research report and 50% students should secure a grade of 6 and above on a 10-point scale. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 10 | The student shall be able to experience lifelong learning | PLO10 | \* Rubrics  \*Comprehensive Exam | UG/PLO9/CE Framework | Mentors will asses the Learning curve of 100% students. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey.. |
| 11 | The student shall be able to understand the environmental issues and to develop sustainable techniques for conservation | PLO1 &11 | \*Comprehensive Exam | UG/PLO11/CE Framework | 100 % students will elaborate their research findings through presentations and will defend the viva voce | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 12 | The student shall be able to integrate various aspects of learning and achieve holistic developmentand be ready for industry 4.0 | PLO5&7 | Comprehensive Exam | UG/PLO12/CE Framework | 100% students will present the seminar and 50% students should secure a grade of 6 and above on a 10-point scale. |  | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey.. |

## **5.6.7 Mapping of Intended Programme Learning Outcomes to Broad-Based Programme** **Educational Objectives (PEOs)**

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PEO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| PLO1 | x | x | x | x |  |  |  | x |  |  | x |  |
| PLO2 | x | x | x | x |  |  |  | x |  |  |  |  |
| PLO3 |  |  | x | x |  |  |  |  |  |  |  |  |
| PLO4 | x | x | x | x | x |  |  |  |  |  |  |  |
| PLO5 |  |  |  |  | x |  | x |  |  |  |  | x |
| PLO6 |  |  |  |  | x | x |  |  |  |  |  |  |
| PLO7 |  |  |  |  |  |  | x |  | x |  |  | x |
| PLO8 |  |  |  |  |  |  |  | x |  |  |  |  |
| PLO9 | x | x | x | x |  |  |  |  |  |  |  |  |
| PLO10 |  |  |  |  |  |  |  |  |  | x |  |  |
| PLO11 |  |  |  |  |  |  | x | x |  |  | x |  |

| Operational  Goals  Operational  Outcomes | | OG1 | OG 2 | OG 3 | Og3 | OG 4 | OG 5 | OG 6 | OG 7 | OG 8 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **bachelor’s Level Programs** | | | | |  |  |  |  |  |  |
| *Name of the programme* | | | | |  |  |  |  |  |  |
|  | Operational Outcome 1 | X |  |  |  |  |  |  |  |  |
|  | Operational Outcome 2 | X |  |  |  |  |  |  |  |  |
|  | Operational Outcome 3 | X |  |  |  |  |  |  |  |  |
|  | Operational Outcome4 | X |  |  |  |  |  |  |  |  |
|  | Operational Outcome 5 |  | X |  |  |  |  |  |  |  |
|  | Operational Outcome 6 |  |  | X |  |  |  |  |  |  |
|  | Operational Outcome 7 |  |  |  | X |  |  |  |  |  |
|  | Operational Outcome 8 |  |  |  |  | X |  |  |  |  |
|  | Operational Outcome 9 |  |  |  |  |  | X |  |  |  |
|  | Operational Outcome10 |  |  |  |  |  |  | X |  |  |
|  | Operational Outcome 11 |  |  |  |  |  |  |  | X | X |

### **5.7 Programme–M. Sc. Marine Science**

## **5.7.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| “To provide fundamental and technical education in the area of Marine Science, to develop student well equipped in research and technology and to make them industry ready and good individuals with a sense of right and wrong, yearning for perfection and courage of conviction and action”. |

## **5.7.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
| **Educational Goals** | |
|  | **PEO 1**: The student shall be able to develop knowledge and expertise to attain academic excellence in the field of Marine science. |
|  | **PEO 2**: The student shall demonstrate technical skills to conduct innovative societal or industry relevant research in the area of marine science. |
|  | **PEO 3**: The student shall be able to use and apply modern IT tools and industry 4.0 relevant technologies to analyze the biological data for logical conclusion. |
|  | **PEO 4**: The student shall be able to execute fundamental and technical knowledge to solve technical, conceptual and abstract scientific problems. |
|  | **PEO 5:** The student shall be able to develop effective communication skills to disseminate technical information including industry 4.0 relevant technical information and ability to write effective reports and reviews for scientific journals. |
|  | **PEO 6:** The student shall be able to develop leadership and entrepreneurial skills and perform responsibly as an individual as well as in a team with accountability and output. |
|  | **PEO 7:** The student shall be able to develop ability to grow with global technical trends and to build a sustainable world |
|  | **PEO 8**: The student shall demonstrate ethical behaviour and develop sensitivity towards marine environment and culturally sensitive issues of the society. |
|  | **PEO 9:** The student shall build a strong network with the industry and alumni in terms of technical knowledge and other opportunities. |
|  | **PEO 10:**The student shall be able to experience lifelong learning. |
|  | **PEO 11:**The student shall be able to create and develop thought process for marine ecosystem, climate change, blue revolution, gender equality or other similar issues and to develop sustainable technologies or solutions with reference to the SDGs-UNDP |
|  | **PEO 12**: The student shall be able to integrate various aspects of learning and achieve holistic development and be ready for industry 4.0 |

**5.7.3 Programme Operational Objectives**

|  |  |
| --- | --- |
| **Operational Goals** | |
| 1 | To create appropriate teaching learning resources, infrastructure and conducive environment to fulfil requirement of education 4.0 for excellence in teaching, learning, research and professional development of students. |
| 2 | To formulate Professional development programmes/opportunities to the faculty and staff to regularly upgrade their knowledge and skills to make teaching-learning research oriented as per current trends. |
| 3 | Program will develop sensitivity to handle the diverse needs of society and accordingly develop facilities and services. |
| 4 | Program will operate to build strong industry interaction, alumni networks and empanelment of expertise from industry |
| 5 | Program will enhance the quality in academics with an aim to attain national and international accreditations and institutional ranking. |
| 6 | Program will arrange all necessary support system to increase the employability, higher education or to start own ventures by the students. |
| 7 | Program will follow ethics to ensure transparency, good governance and fair practices |
| 8 | Program will provide opportunities for international exposure for its students and faculty |

**5.7.4 Programme Learning Outcomes**

|  |  |
| --- | --- |
| **Intended Learning Outcomes** | |
|  | PLO 1: The student will apply fundamental and technical knowledge to develop critical thought process and practical understanding of marine science. |
|  | PLO 2: The student will identify, formulate, research literature, review existing knowledge and analyze complex molecular and biochemical problems in the marine world to reach substantiated conclusions using principles of marine science. |
|  | **PLO 3:** The student will be able to apply modern IT tools, IOT, cloud, data analytics etc. for acquisition and analysis of biological data |
|  | PLO 4: The student will demonstrate understanding of research principles and expertise in technical skills to plan independent marine science related research projects |
|  | PLO 5: The student will develop advanced level of communication skills to effectively disseminate research and technical information and shall be able to summarize scientific results; write effective reports and reviews in scientific journals. |
|  | PLO 6: The student will demonstrate the ability to work independently as individuals and flexibly within a team with effectiveness and accountability. |
|  | PLO 7: The student will build skills to evolve into a responsible global citizen |
|  | PLO 8: The student will develop sensitivity to environmental issues and concerns and shall understand principles of ethics within the framework and apply these principles for environmentally and culturally sensitive issues. |
|  | PLO 9: The student will apply fair management practices to manage one’s own work and/or projects and ventures. |
|  | PLO 10: The student will recognize the role of personal development, self-directed study and discovery in learning to develop life-long learning. |
|  | PLO 11: The student will develop appreciation for nature and the need for its preservation and conservation and demonstrate care for the environment by development of sustainable technologies for environment. |
|  | PLO 12: The student will develop the capability to integrate theory, technical information and appropriate research methods for the benefit of society. |

**5.7.5 Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Outcomes** | |
|  | Program will promote use of appropriate methodology and pedagogical tools for teaching, learning and development. |
|  | The curriculum will be contemporary and relevant to meet research and industry requirements and benchmarked on global standards by incorporating feedback from all the stakeholders. |
|  | The student of AIMST will graduate in the stipulated time period |
|  | University shall provide academic facilities, technological Resources for teaching and learning at AIMST |
|  | The student of AIMST will earn achievements in intra and inter-university Extra Curricular activities. |
|  | Faculty and students will be engaged in scholarly and professional activities in order to enhance their competencies and to contribute to the existing body of Knowledge. |
|  | AIMST will integrate ethics and values in teaching, theory and practice, develop and retain excellent students, faculty and staff. |
|  | AIMST will facilitate cultivation of cultural and environmental conservation values among students. |
|  | AIMST shall develop and maintain strong relationship with research institutes, alumni and industry. |
|  | AIMST will facilitate joint research collaborations; invite international delegates and speakers for seminars and conferences and various other opportunities for global exposure and will support all the students for quality placements or join family business or start their own venture |
|  | AIMSTshall establish an internal quality cell for operational quality and process improvement. |

**5.7.6 Student Learning Assessment for M. Sc. Marine Science**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **#** | **PEO’s** | **PLO’s** | **Direct** | **Tool\_No for Direct Assessment** | **Target Performance** | **Indirect** | **Tool\_No for Indirect Assessment** | **Target Performance** |
| 1 | The student shall be able to develop knowledge and expertise to attain academic excellence in the field of Marine science. | PLO 1: The student will apply fundamental and technical knowledge to develop critical thought process and practical understanding of marine science. | 1. Comprehensive Exam | PG/PLO1/CE Framework | 1. 75% students shall pass the exam | 1. Student Exit Survey | 1. PG/PLO/Exit Survey | 1. 80% students’ response range between 3.75-5 on the Likert Scale in the Student Exit Survey |
| 2 | The student shall demonstrate technical skills to conduct innovative societal or industry relevant research in the area of marine science. | PLO 2: The student will identify, formulate, research literature, review existing knowledge and analyze complex molecular and biochemical problems in the marine world to reach substantiated conclusions using principles of marine science.  &  PLO4&5 | 1. Comprehensive Exam  2. summer internship  3. Dissertation  5. Plagiarism Checking of Term Paper/Practical Training/Industrial Internship/ Dissertation I and Dissertation II | 1.PG/PLO2/CE Framework  2.PG/PLO2/summer internship  3. PG/PLO2/Dissertation | 1. 75% students shall pass the exam  2. 100% students will undertake and 90% shall complete the same in first attempt.  3. 100% students shall leverage IT in order to complete their Assignments and Projects  4. Students should secure a grade point of 5 and above on a 10-point scale.  5. 100% Students should be checked for plagiarism in NTCC report submissions and allowed to appear for viva-voce upon obtaining plagiarism below 15%. | 1. Student Exit Survey  2. Assessment by External Examiners | 1. PG/PLO/Exit Survey  2.  PG/PLO/Dissertation | 1. 80% students’ response range between 3.75-5 on the Likert Scale in the Student Exit Survey  2. The Industry Internship Guide/external examiner rates the 90 % students between grade point 6-10. |
| 3 | The student shall be able to use and apply modern IT tools and industry 4.0 relevant technologies to analyze the biological data for logical conclusions | PLO3: The student will be able to apply modern IT tools, IOT, cloud, data analytics etc. for acquisition and analysis of biological data. | 1. Comprehensive Exam | PG/PLO3/CE Framework | 1. 75% students shall pass the exam | 1. Student Exit Survey | 1. PG/PLO/Exit Survey | 80% students’ response range between 3.75-5 on the Likert Scale in the Student Exit Survey |
| 4 | The student shall be able to execute fundamental and technical knowledge to solve technical, conceptual and abstract scientific problems. | PLO 4: The student will demonstrate understanding of research principles and expertise in technical skills to plan independent marine science related research projects. | 1. Summer internship  2. Dissertation  3. Plagiarism Checking of Term Paper/Practical Training/Industrial Internship/ Dissertation I and Dissertation II | 1. PG/PLO4 /summer internship  2. PG/PLO4 /Dissertation | 1. 100% students will undertake and 90% shall complete the same in first attempt.  2. 100% students shall leverage IT in order to complete their Assignments and Projects  3. Students should secure a grade point of 5 and above on a 10-point scale.  4. 100% Students should be checked for plagiarism in NTCC report submissions and allowed to appear for viva-voce upon obtaining plagiarism below 15%. | 1.Student Exit Survey  2. Assessment by External Examiners | 1. PG/PLO/Exit Survey  2.  PG/PLO/Dissertation | 1. 80% students’ response range between 3.75-5 on the Likert Scale in the Student Exit Survey  2. The Industry Internship Guide/external examiner rates the 90 % students between grade point 6-10. |
| 5 | The student shall be able to develop effective communication skills to disseminate technical information including industry 4.0 relevant technical information and ability to write effective reports and reviews for scientific journals. | PLO2  &  PLO 5: The student will develop advanced level of communication skills to effectively disseminate research and technical information and shall be able to summarize scientific results; write effective reports and reviews in scientific journals. | 1. Communication skills Course Result analysis of all semesters | 1. PG/PLO5/BC | 1. 80% students should secure a grade of 5 and above on a 10-point scale in the presentation of communication skills course | 1.Student Exit Survey | 1. PG/PLO/Exit Survey | 1. 80% students’ response range between 3.75-5 on the Likert Scale in the Student Exit Survey |
| 6 | The student shall be able to develop leadership and entrepreneurial skills and perform responsibly as an individual as well as in a team with accountability and output. | PLO 6: The student will demonstrate the ability to work independently as individuals and flexibly within a team with effectiveness and accountability. | 1. Comprehensive Exam  2. Behavioral Science Course Result analysis of all semesters  3. FBL Course Result analysis of all semesters | 1. PG/PLO6/CE Frame work  2. PG/PLO6/BS  3. PG/PLO6 /FBL | 1. 75% students shall pass the exam  2. 80% students should secure a grade of 5 and above on a 10-point scale  3. 80% students should secure a grade of 5 and above on a 10-point scale | 1. Student Exit Survey | 1. PG/PLO/Exit Survey | 1. 80% students’ response range between 3.75-5 on the Likert Scale in the Student Exit Survey |
| 7 | The student shall be able to develop ability to grow with global technical trends and to build a sustainable world | PLO 7: The student will build skills to evolve into a responsible global citizen | 1. Communication skills Course Result analysis of all semesters  2. Behavioral Science Course Result analysis of all semesters  3. Plagiarism Checking of Term Paper/Practical Training/Industrial Internship/ Dissertation I and Dissertation II | 1. PG/PLO7/CE Famework  2. PG/PLO7/BS  3. PG/PLO7 /Dissertation | 1. 80% students should secure a grade of 5 and above on a 10-point scale in the presentation of communication skills course  2. 80% students should secure a grade of 5 and above on a 10-point scale  3. 100% Students should be checked for plagiarism in NTCC report submissions and allowed to appear for viva-voce upon obtaining plagiarism below 15%. | 1. Student Exit Survey | 1. PG/PLO/Exit Survey | 1. 80% students’ response range between 3.75-5 on the Likert Scale in the Student Exit Survey |
| 8 | The student shall demonstrate ethical behaviour and develop sensitivity towards marine environment and culturally sensitive issues of the society. | PLO 8: The student will develop sensitivity to environmental issues and concerns and shall understand principles of ethics within the framework and apply these principles for environmentally and culturally sensitive issues. | 1. Summer internship  2. Dissertation  3. Plagiarism Checking of Term Paper/Practical Training/Industrial Internship/ Dissertation I and Dissertation II | 1. PG/PLO8 / Summer internship  2. PG/PLO8 /Dissertation  3. PG/PLO8 /Dissertation | 1. 100% students will undertake and 90% shall complete the same in first attempt.  2. 100% students shall leverage IT in order to complete their Assignments and Projects  3. Students should secure a grade point of 5 and above on a 10-point scale.  4. 100% Students should be checked for plagiarism in NTCC report submissions and allowed to appear for viva-voce upon obtaining plagiarism below 15%. | 1. Student Exit Survey  2.  Assessment by External Examiners | 1. PG/PLO/Exit Survey  2.  PG/PLO/Dissertation | 1. 80% students’ response range between 3.75-5 on the Likert Scale in the Student Exit Survey  2.. The Industry Internship Guide/external examiner rates the 90 % students between grade point 6-10. |
| 9 | The student shall build a strong network with the industry and alumni in terms of technical knowledge and other opportunities. | PLO 9: The student will apply fair management practices to manage one’s own work and/or projects and ventures. | 1. Comprehensive Exam  2. Summer internship  3. Dissertation | 1. PG/PLO9/CE Frame work  2. PG/PLO9 / Summer internship  3. PG/PLO9 /Dissertation | 1. 75% students shall pass the exam  2. 100% students will undertake and 90% shall complete the same in first attempt.  3. 100% students shall leverage IT in order to complete their Assignments and Projects  4. Students should secure a grade point of 5 and above on a 10-point scale. | 1. Student survey  2.  Assessment by External Examiners | 1. PG/PLO/Exit Survey  2.  PG/PLO/Dissertation | 1. 80% students’ response range between 3.75-5 on the Likert Scale in the Student Exit Survey  2. The Industry Internship Guide/external examiner rates the 90 % students between grade point 6-10. |
| 10 | The student shall be able to experience lifelong learning. | PLO 10: The student will recognize the role of personal development, self-directed study and discovery in learning to develop life-long learning. | 1. Comprehensive Exam | 1. PG/PLO10/CE Framework | 1. 75% students shall pass the exam | 1. Student Exit Survey  2. Assessment by External Examiners | 1. PG/PLO/Exit Survey  2.  PG/PLO/Dissertation | 1. 80% students’ response range between 3.75-5 on the Likert Scale in the Student Exit Survey  2. The Industry Internship Guide/external examiner rates the 90 % students between grade point 6-10. |
|  |
| 11 | The student shall be able to create and develop thought process for marine ecosystem, climate change, blue revolution, gender equality or other similar issues and to develop sustainable technologies or solutions with reference to the SDGs-UNDP | PLO8 &  PLO 11: The student will develop appreciation for nature and the need for its preservation and conservation and demonstrate care for the environment by development of sustainable technologies for environment. | 1. Comprehensive Exam | 1. PG/PLO11/CE Framework | 1. 75% students shall pass the exam | 1. Student Exit Survey  2. Assessment by External Examiners | 1. PG/PLO/Exit Survey  2.  PG/PLO/Dissertation | 1. 80% students’ response range between 3.75-5 on the Likert Scale in the Student Exit Survey  2. The Industry Internship Guide/external examiner rates the 90 % students between grade point 6-10. |
| 12 | The student shall be able to integrate various aspects of learning and achieve holistic development and **be ready for industry 4.0** | PLO 12: The student will develop the capability to integrate theory, technical information and appropriate research methods for the benefit of society. | 1. Comprehensive Exam | 1. PG/PLO12/CE Framework | 1. 75% students shall pass the exam | 1. Student Exit Survey  2. Assessment by External Examiners | 1. PG/PLO/Exit Survey  2.  PG/PLO/Dissertation | 1. 80% students’ response range between 3.75-5 on the Likert Scale in the Student Exit Survey  2. The Industry Internship Guide/external examiner rates the 90 % students between grade point 6-10. |

## **5.7.7 Mapping of Intended Programme Learning Outcomes to Broad-Based Programme** **Educational Objectives (PEOs)**

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PEO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| PLO1 | x |  |  |  |  |  |  |  |  |  |  |  |
| PLO2 |  | x |  |  | x |  |  |  |  |  |  |  |
| PLO3 |  |  | x |  |  |  |  |  |  |  |  |  |
| PLO4 |  | x |  | x |  |  |  |  |  |  |  |  |
| PLO5 |  | x |  |  | x |  |  |  |  |  |  |  |
| PLO6 |  |  |  |  |  | x |  |  |  |  |  |  |
| PLO7 |  |  |  |  |  |  | x |  |  |  |  |  |
| PLO8 |  |  |  |  |  |  |  | x |  |  | X |  |
| PLO9 |  |  |  |  |  |  |  |  | x |  |  |  |
| PLO10 |  |  |  |  |  |  |  |  |  | x |  |  |
| PLO11 |  |  |  |  |  |  |  |  |  |  | x |  |
| PLO 12 |  |  |  |  |  |  |  |  |  |  |  | x |

| Operational  Goals  Operational  Outcomes | | OG1 | OG 2 | OG 3 | Og3 | OG 4 | OG 5 | OG 6 | OG 7 | OG 8 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MAsters ’s Level Programs** | | | | |  |  |  |  |  |  |
| *Name of the programme* | | | | |  |  |  |  |  |  |
|  | Operational Outcome 1 | X |  |  |  |  |  |  |  |  |
|  | Operational Outcome 2 | X |  |  |  |  |  |  |  |  |
|  | Operational Outcome 3 | X |  |  |  |  |  |  |  |  |
|  | Operational Outcome4 | X |  |  |  |  |  |  |  |  |
|  | Operational Outcome 5 |  | X |  |  |  |  |  |  |  |
|  | Operational Outcome 6 |  |  | X |  |  |  |  |  |  |
|  | Operational Outcome 7 |  |  |  | X |  |  |  |  |  |
|  | Operational Outcome 8 |  |  |  |  | X |  |  |  |  |
|  | Operational Outcome 9 |  |  |  |  |  | X |  |  |  |
|  | Operational Outcome10 |  |  |  |  |  |  | X |  |  |
|  | Operational Outcome 11 |  |  |  |  |  |  |  | X | X |

**5.8 Programme– B.Sc. (H) Life Sciences**

## **5.8.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| The Bachelor of Science Program in BSc. (H). Life Sciences is a full-time multidisciplinary undergraduate program of three year duration. This program provides a nurturing and interactive environment to promote integration of multidisplinary approaches to the conduct of research and to promote learning in different areas of Life Sciences. To develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong yearning for perfection and imbibe attributes of courage of conviction and action |

## **5.8.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
|  | |
|  | The student shall be able to apply the understanding of ethical reasoning and the ethical issues associated with current Life Sciences research |
|  | The student shall be able to use the skill of Team work to complete assignments and projects, Offer Leaderships and Adapt to Change |
|  | The student shall be able to use a range of learning strategies Sustain intellectual curiosity, know how to continue to learn as a graduate |
|  | The student shall be able to recognize the interrelationship between environmental, social and economic sustainability. Appropriately apply their environmental and sustainability literacy in a highly diverse range of contexts |
|  | The student shall be able to learn concepts in theoretical and applied aspects in diverse areas of life sciences |
|  | The student shall be able to analyse a systematic understanding of fundamental relevant questions in life science, molecular and cellular physiology, Virology and immunology in a synergistic framework |
|  | The student shall use critical and analytical skills to analyze problems, propose solutions and prioritize work. |
|  | The student shall be able to differentiate practical skills in relation to chemistry,botany,biochemistry, zoology, microbiology have an awareness of good practice in laboratory work and health and safety |
|  | The student shall learn to illustrate data and learn data interpretation. |
|  | The student shall be able to communicate effectively on the topics of life sciences |
|  | The student shall recite learning skills in interpersonal understanding, teamwork. |
|  | The student shall use and apply appropriate tools, techniques and resources for understanding of the basics concepts in Life sciences discipline |

**5.8.3 Programme Operational Objectives**

|  |
| --- |
| BSc (H) Life Sciences programme will promote use of appropriate methodology and pedagogical tools for teaching, learning and development. |
|  |
| The programme will demonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| The programme aims to continuously strive to build strong industry interaction, alumni networks and empanelment of expertise from industry. |
| The programme will improve processes and systems with an aim to attainnational and international accreditations. |
| The programme will support students in order to facilitate campus recruitment, higher education or starting their own ventures. |
| The programme will actethically to ensure transparency and good governance **while discharging** various  responsibilities to its  stakeholders and execution of policies and programs |
| The programme will create opportunities forinternational exposure for its students and faculty |

**5.8.4 Programme Learning Outcomes**

|  |  |  |
| --- | --- | --- |
| **Intended Learning Outcomes** | | |
| 1 |  | The student will be able to define integrated approach to knowledge factual and theoretical basis of Life sciences on the molecular, cellular, and organism levels. |
| 2 |  | The student will develop critical skills for the analysis of complex Life sciences problems to reach sustained conclusions using logical principles. |
| 3 |  | The student will be able to use IT tool show problem solving skills to develop, plan and implement practical solutions within a diverse range life sciences. |
| 4 |  | The student will use knowledge and scientifically proven methodologies to perform experiments and result interpretation for the generation of informative data to provide meaningful definitive conclusions. |
| 5 |  | The student will be able to develop effective communication skills on various disciplines of Life sciences with community, apply knowledge to become effective written and oral communicators in their profession with tenacity in multidisciplinary settings |
| 6 |  | . The student will demonstrate effectively as an individual and as a member or leader of team in diverse disciplines and cultures of life sciences for achieving logical rationale. |
| 7 |  | The student will recognize the responsibility of being a global citizen. |
| 8 |  | The student will apply to intercede with in the defined limits of bioethical principles to be implemented in the Life sciences research and academia. |
| 9 |  | The student will demonstrate knowledge and understanding of the technical and management principles in order to achieve the organizational goal in multidisciplinary environments. |
| 10 |  | The student will develop technical skills which will enable effective lifelong learning in the field of Life sciences. |
| 11 |  | The student will demonstrate knowledge and understanding of human biological system and their place in the natural environment, recognize the significance of societal and environmental contexts with special stress on sustainable development. |
| 12 |  | The student will analyze and investigate professional, ethical, societal, environmental and economic responsibility to the professional practice. |

**5.8.5 Programme Operational Outcomes**

|  |  |  |
| --- | --- | --- |
| **Operational Outcomes** | | |
| 1 |  | The B.Sc. (H) Life Science program will help to achieve the University’s goal of achieving academic excellence by providing valuable resources to students. |
| 2 |  | The programme will provide environment for innovation and research and academic facilities, technological resources for the intellectual growth of faculty and students |
| 3 |  | The programme will facilitate resources to cater diverse need of the students and faculty to achieve academia excellence. |
| 4 |  | The programme will develop building of strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training.. |
| 5 |  | The programme will **develop infrastructure and resources to** attainnational and international accreditations. |
| 6 |  | The programme will extent support to the students to provide employment , avenues for higher education and starting their own ventures. |
| 7 |  | The programme will **ensure** transparency and good governance  by inculcating ethics and values in teaching theory and research |
| 8 |  | The programme will invites delegates and speakers in conferences and seminars and provide various other opportunities for global exposure |

**5.8.6 Programme Educational Outcome Assessment for B.Sc. (H) Life Sciences**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall be able to develop concepts in theoretical and applied aspects of Lifesciences | The student will be able to define integrated approach to knowledge factual and theoretical basis of Lifescienceson the molecular, cellular, and organism levels. | \*Comprehensive Exam | UG/PLO1/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey. | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall be able to demonstrate systematic understanding of fundamental relevant questions and practical skills related area of lifescience. | The student will develop critical skills for the analysis of complex life sciences problems to reach sustained conclusions using logical principles. | Project report submission. | UG/PLO2/Project/Viva-voce | 100% students will undertake and complete the dissertation | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \*Comprehensive Exam | UG/PLO2/CE Framework |
| 3 | The student shall be able to use and apply modern IT tools in relation to lifescience areas. | The student will be able to use IT tool show problem solving skills to develop, plan and implement practical solutions within a diverse range of Lifescience areas | \*Comprehensive Exam | UG/PLO3/Quiz/class tests/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to interpret and comprehend research problems, propose solutions and prioritize work. | The student will use knowledge and scientifically proven methodologies to perform experiments and result interpretation for the generation of informative data to provide meaningful definitive conclusions. | \* Project Rubrics | UG/PLO4/viva-voce | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | UG/PLO4/CE Framework |
| 5 | The student shall be able to employ effective communication skills on various topics of Lifesciences | The student will be able to develop effective communication skills on various disciplines of Lifesciencewith community, apply knowledge to become effective written and oral communicators in their profession with tenacity in multidisciplinary settings. | Rubrics Communication skills |  | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | UG/PLO5/ BC |
| \*Comprehensive Exam | UG/PLO5/CE Framework |
| 6 | The student shall be able to attain leadership skills and perform responsibly as an individual, and as a member in diverse teams in multidisciplinary settings. | The student will demonstrate effectively as an individual and as a member or leader of team in diverse disciplines of lifesciencesfor achieving logical rationale. | \* Behavioural Science rubrics |  | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | UG/PLO6/BS |
| \*Comprehensive Exam | UG/PLO6/CE Framework |
| 7 | The student shall be able to developinto a responsible global citizen. | The student will recognize the responsibility of being a global citizen. | Rubrics FBL |  | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO7/ |
| UG/PLO7/CE Framework |
| 8 | The student shall practice ethical behavior and shall know the ethical issues associated with current research and development | The student will apply to intercede with in the defined limits of bioethical principles to be implemented in life science research and academia. | \*Plagiarism Checking of Project report, |  | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \* Comprehensive Exam | UG/PLO8/CE Framework |  |  |  |
| 9 | The student shall be able to develop management and entrepreneurship skills. | The student will demonstrate knowledge and understanding of the technical and management principles in order to achieve the organizational goal in multidisciplinary environments. | Section 7of comprehensive exam.  ----------------- \* Project report submission. | UG/PLO9/EMP | 70% students shall score ≧ 60 % (Grade B or above)  100% students shall submit the project reports. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | UG/PLO9/CE Framework |  | UG/PLO/ |  |
| 10 | The student shall be able to evaluate intellectual curiosity, and reflect the habit of life long learning. | The student will develop technical skills which will enable effective lifelong learning in the areas of lifesciences |  |  | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | UG/PLO/  Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Section 8 of Comprehensive Exam | UG/PLO10/CE Framework |
| 11 | The student shall be able to analyze the interrelationship between environment, social and economic sustainability. | The student will demonstrate knowledge and understanding of human biological system and their place in the natural environment, recognize the significance of societal and environmental contexts with special stress on sustainable development. | \*Section 9 of Comprehensive Exam | UG/PLO11/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | UG/PLO/  Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 12 | The student shall be able to apply knowledge gained in different areas of lifesciencesto fulfil societal needs from time to time. | The student will analyze and investigate professional, ethical, societal, environmental and economic responsibility to the professional practice. | \*Comprehensive Exam, | UG/PLO12/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) |  |

**5.8.7 Student Learning Assessment for B. Sc.(H) Lifesciences**

## Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PEO/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** | **PEO 11** | **PEO 12** |
| PLO 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 3 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 5 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 6 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 7 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 8 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 9 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 10 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 11 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 12 |  |  |  |  |  |  |  |  |  |  |  |  |

**5.9 Programme– MSc Genomics**

## **5.9.1 Mission Statement**

To develop professionals who are well trained in Genomics and are able to translate knowledge obtained through the programme in teaching and research for the betterment of diverse sectors encompassing agriculture, biotechnology, health and advancement of knowledge and well being of the human society at large. The programme will make them not only "excellent professionals" but also good individuals, with understanding and regards for "human values", pride in their heritage and culture, a sense of right and wrong, and a yearning for perfection.

## **5.9.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
|  | |
|  | The student shall be able to develop concepts in theoretical and applied aspects of Genomics |
|  | The student shall be able to demonstrate systematic understanding of fundamental relevant questions and practical skills related to Genomics. |
|  | The student shall be able to use and apply modern tools in relation to Genomics |
|  | The student shall be able to interpret and comprehend research problems, propose solutions and prioritize work. |
|  | The student shall be able to employ effective communication skills on various topics of biosciences and Genomics |
|  | The student shall be able to attain leadership skills and perform responsibly as an individual, and as a member in diverse teams in multidisciplinary settings. |
|  | The student shall be able to developinto a responsible global citizen. |
|  | The student shall practice ethical behavior and shall know the ethical issues associated with current Biotechnological research |
|  | The student shall be able to develop management and entrepreneurship skills. |
|  | The student shall be able to evaluate intellectual curiosity, and reflect the habit of life long learning. |
|  | The student shall be able to analyze the interrelationship between environment, social and economic sustainability. |
|  | The student shall be able to apply genomics to fulfill societal needs from time to time. |

**5.9.3 Programme Operational Objectives**

|  |  |
| --- | --- |
|  | |
| **1** | The MSc Genomics programme aims to help achieve the University’s goal of achieving academic excellence by providing valuable resources to students. |
| **2** | The programme will provide opportunities to the faculty and staff   to regularly upgrade their knowledge and skills by facilitating their participation in professional development programmes. |
| **3** | The programme will demonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| **4** | The programme aims to continuously strive to build strong industry interaction, alumni networks and empanelment of expertise from industry. |
| **5** | The programme will improveprocesses and systems with an aim to attainnational and international accreditations. |
| **6** | The programme will support students in order to facilitate campus recruitment, higher education or starting their own ventures. |
| **7** | The programmewill actethically to ensure transparency and good governance **while discharging** various  responsibilities to its  stakeholders and execution of policies and programs |
| **8** | The programme will createopportunities forinternational exposure for its students and faculty |

**5.9.4 Programme Learning Outcomes**

|  |  |  |
| --- | --- | --- |
| **Intended Learning Outcomes** | | |
| 1 |  | The student will be able to define integrated approach to knowledge factual and theoretical basis of genomics on the molecular, cellular, and organism levels. |
| 2 |  | The student will develop critical skills for the analysis of complex genomicsproblems to reach sustained conclusions using logical principles. |
| 3 |  | The student will be able to use IT tool show problem solving skills to develop, plan and implement practical solutions within a diverse range of genomicsdivisions. |
| 4 |  | The student will use knowledge and scientifically proven methodologies to perform experiments and result interpretation for the generation of informative data to provide meaningful definitive conclusions. |
| 5 |  | The student will be able to develop effective communication skills on various disciplines of genomicswith community, apply knowledge to become effective written and oral communicators in their profession with tenacity in multidisciplinary settings |
| 6 |  | The student will demonstrate effectively as an individual and as a member or leader of team in diverse disciplines and cultures of genomicsfor achieving logical rationale. |
| 7 |  | The student will recognize the responsibility of being a global citizen. |
| 8 |  | The student will apply to intercede with in the defined limits of bioethical principles to be implemented in the genomics research and academia. |
| 9 |  | The student will demonstrate knowledge and understanding of the technical and management principles in order to achieve the organizational goal in multidisciplinary environments. |
| 10 |  | The student will develop technical skills which will enable effective lifelong learning in the field of health and allied sciences. |
| 11 |  | The student will demonstrate knowledge and understanding of biological system and their place in the natural environment, recognize the significance of societal and environmental contexts with special stress on sustainable development. |
| 12 |  | The student will analyze and investigate professional, ethical, societal, environmental and economic responsibility to the professional practice. |

**5.9.5 Programme Operational Outcomes**

|  |  |  |
| --- | --- | --- |
| **Operational Outcomes** | | |
| 1 |  | The MSc Genomics will help to achieve the University’s goal of achieving academic excellence by providing valuable resources to students. |
| 2 |  | The programme will provide environment for innovation and research and academic facilities, technological resources for the intellectual growth of faculty and students |
| 3 |  | The programme will facilitate resources to cater diverse need of the students and faculty to achieve academia excellence. |
| 4 |  | The programme will develop building of strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training. |
| 5 |  | The programme will **develop infrastructure and resources to** attainnational and international accreditations. |
| 6 |  | The programme will extent support to the students to provide employment , avenues for higher education and starting their own ventures. |
| 7 |  | The programme will **ensure** transparency and good governance  by inculcating ethics and values in teaching theory and research |
| 8 |  | The programme will invites delegates and speakers in conferences and seminars and provide various other opportunities for global exposure |

**5.9.6 Programme Educational Outcome Assessment for MSc Genomics**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall be able to develop concepts in theoretical and applied aspects of genomics | The student will be able to define integrated approach to knowledge factual and theoretical basis of genomics on the molecular, cellular, and organism levels. | \*Comprehensive Exam | PG/PLO1/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey. | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall be able to demonstrate systematic understanding of fundamental relevant questions and practical skills related to genomics | The student will develop critical skills for the analysis of complex genomics problems to reach sustained conclusions using logical principles. | Project report submission.  \*Comprehensive Exam | PG/PLO2/Project/Viva-voce  PG/PLO2/CE Framework | 100% students will undertake and complete the dissertation | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| 3 | The student shall be able to use and apply modern tools in relation to Genomics. | The student will be able to use genomics tool show problem solving skills to develop, plan and implement practical solutions within a diverse range of medical, Agricultural and industries needs. | \*Comprehensive Exam | PG/PLO3/Quiz/class tests/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to interpret and comprehend research problems, propose solutions and prioritize work. | The student will use knowledge and scientifically proven methodologies to perform experiments and result interpretation for the generation of informative data to provide meaningful definitive conclusions. | \*Project Rubrics | PG/PLO4/viva-voce | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | PG/PLO4/CE Framework |
| 5 | The student shall be able to employ effective communication skills on various topics of biosciences and genomics | The student will be able to develop effective communication skills on various disciplines of genomics with community, apply knowledge to become effective written and oral communicators in their profession with tenacity in multidisciplinary settings. | Rubrics Communication skills | PG/PLO5/ BC | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | PG/PLO5/CE Framework |
| 6 | The student shall be able to attain leadership skills and perform responsibly as an individual, and as a member in diverse teams in multidisciplinary settings. | The student will demonstrate effectively as an individual and as a member or leader of team in diverse disciplines and cultures of genomics and biotechnology for achieving logical rationale. | \*Behavioural Science rubrics | PG/PLO6/BS | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | UG/PLO6/CE Framework |
| 7 | The student shall be able to developinto a responsible global citizen. | The student will recognize the responsibility of being a global citizen. | Rubrics FBL | PG/PLO7/CE Framework | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 8 | The student shall practice ethical behavior and shall know the ethical issues associated with current genomicresearch | The student will apply to intercede with in the defined limits of bioethical principles to be implemented in the genomic research and academia. | \*Plagiarism Checking of Project report,  \* Comprehensive Exam | PG/PLO8/CE Framework | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
|  |  |  |
| 9 | The student shall be able to develop management and entrepreneurship skills. | The student will demonstrate knowledge and understanding of the technical and management principles in order to achieve the organizational goal in multidisciplinary environments. | Section 7of comprehensive exam. \* Project report submission.  \*Comprehensive Exam | PG/PLO9/EMP  PG/PLO9/CE Framework | 70% students shall score ≧ 60 % (Grade B or above)  100% students shall submit the project reports. | Student Exit Survey | PG/PLO/Exit Survey  PG/PLO/ | 80% students shall score ≥ 75% in exit survey. |
| 10 | The student shall be able to evaluate intellectual curiosity, and reflect the habit of life long learning. | The student will develop technical skills which will enable effective lifelong learning in the field of genomics, health and allied sciences. | \*Section 8 of Comprehensive Exam | PG/PLO10/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | PG/PLO/  Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 11 | The student shall be able to analyze the interrelationship between environment, social and economic sustainability. | The student will demonstrate knowledge and understanding of biological system and their place in the natural environment, recognize the significance of societal and environmental contexts with special stress on sustainable development. | \*Section 9 of Comprehensive Exam | PG/PLO11/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | PG/PLO/  Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 12 | The student shall be able to apply genomics to fulfil societal needs from time to time. | The student will analyze and investigate professional, ethical, societal, environmental and economic responsibility to the professional practice. | \*Comprehensive Exam, | PG/PLO12/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) |  |

## **5.9.7 Student Learning Assessment for M. Sc.(H) Genomics**

## Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PEO/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** | **PEO 11** | **PEO 12** |
| PLO 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 3 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 5 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 6 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 7 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 8 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 9 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 10 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 11 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 12 |  |  |  |  |  |  |  |  |  |  |  |  |

**5.10 Programme– M.Sc. Immunology**

## **5.10.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide advanced education in the area of immunology and in the futuristic and emerging frontier areas of knowledge, learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong, yearning for perfection and courage of conviction and action. |

## **5.10.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
|  | |
|  | The student shall be able to develop concepts in theoretical and applied aspects of Immunology |
|  | The student shall be able to demonstrate systematic understanding of fundamental relevant questions and practical skills related to Immunology. |
|  | The student shall be able to use and apply modern tools in relation to Immunology. |
|  | The student shall be able to interpret and comprehend research problems, propose solutions and prioritize work. |
|  | The student shall be able to employ effective communication skills on various topics of biosciences and Immunology. |
|  | The student shall be able to attain leadership skills and perform responsibly as an individual, and as a member in diverse teams in multidisciplinary settings. |
|  | The student shall be able to developinto a responsible global citizen. |
|  | The student shall practice ethical behavior and shall know the ethical issues associated with current Immunological research |
|  | The student shall be able to develop management and entrepreneurship skills. |
|  | The student shall be able to evaluate intellectual curiosity, and reflect the habit of life long learning. |
|  | The student shall be able to analyze the interrelationship between environment, social and economic sustainability. |
|  | The student shall be able to apply immunology to fulfill societal needs from time to time. |

**5.10.3 Programme Operational Objectives**

|  |
| --- |
| The M.Sc. Immunology programme aims to help achieve the University’s goal of achieving academic excellence by providing valuable resources to students. |
| The programme will provide opportunities to the faculty and staff   to regularly upgrade their knowledge and skills by facilitating their participation in professional development programmes. |
| The programme will demonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| The programme aims to continuously strive to build strong industry interaction, alumni networks and empanelment of expertise from industry. |
| The programme will improveprocesses and systems with an aim to attainnational and international accreditations. |
| The programme will support students in order to facilitate campus recruitment, higher education or starting their own ventures. |
| The programmewill actethically to ensure transparency and good governance **while discharging** various  responsibilities to its  stakeholders and execution of policies and programs |
| The programme will createopportunities forinternational exposure for its students and faculty |

**5.10.4 Programme Learning Outcomes**

|  |  |  |
| --- | --- | --- |
| **Intended Learning Outcomes** | | |
| 1 |  | The student will be able to define integrated approach to knowledge factual and theoretical basis of Immunology on the molecular, cellular, and organism levels. |
| 2 |  | The student will develop critical skills for the analysis of complex immunological problems to reach sustained conclusions using logical principles. |
| 3 |  | The student will be able to use tool show problem solving skills to develop, plan and implement practical solutions within a diverse range of immunology divisions. |
| 4 |  | The student will use knowledge and scientifically proven methodologies to perform experiments and result interpretation for the generation of informative data to provide meaningful definitive conclusions. |
| 5 |  | The student will be able to develop effective communication skills on various disciplines of immunology with community, apply knowledge to become effective written and oral communicators in their profession with tenacity in multidisciplinary settings |
| 6 |  | The student will demonstrate effectively as an individual and as a member or leader of team in diverse disciplines and cultures of immunology for achieving logical rationale. |
| 7 |  | The student will recognize the responsibility of being a global citizen. |
| 8 |  | The student will apply to intercede with in the defined limits of bioethical principles to be implemented in the immunology research and academia. |
| 9 |  | The student will demonstrate knowledge and understanding of the technical and management principles in order to achieve the organizational goal in multidisciplinary environments. |
| 10 |  | The student will develop technical skills which will enable effective lifelong learning in the field of health and allied sciences. |
| 11 |  | The student will demonstrate knowledge and understanding of human biological system and their place in the natural environment, recognize the significance of societal and environmental contexts with special stress on sustainable development. |
| 12 |  | The student will analyze and investigate professional, ethical, societal, environmental and economic responsibility to the professional practice. |

**5.10.5 Programme Operational Outcomes**

|  |  |  |
| --- | --- | --- |
| **Operational Outcomes** | | |
| 1 |  | The M.Sc. Immunology programme will help to achieve the University’s goal of achieving academic excellence by providing valuable resources to students. |
| 2 |  | The programme will provide environment for innovation and research and academic facilities, technological resources for the intellectual growth of faculty and students |
| 3 |  | The programme will facilitate resources to cater diverse need of the students and faculty to achieve academia excellence. |
| 4 |  | The programme will develop building of strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training.. |
| 5 |  | The programme will **develop infrastructure and resources to** attainnational and international accreditations. |
| 6 |  | The programme will extent support to the students to provide employment, avenues for higher education and starting their own ventures. |
| 7 |  | The programme will **ensure** transparency and good governance  by inculcating ethics and values in teaching theory and research |
| 8 |  | The programme will invites delegates and speakers in conferences and seminars and provide various other opportunities for global exposure |

**5.10.6 Programme Educational Outcome Assessment for M.Sc. Immunology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall be able to develop concepts in theoretical and applied aspects of Immunology | The student will be able to define integrated approach to knowledge factual and theoretical basis of Immunologyon the molecular, cellular, and organism levels. | \*Comprehensive Exam | PG/PLO1/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey. | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall be able to demonstrate systematic understanding of fundamental relevant questions and practical skills related to Immunology. | The student will develop critical skills for the analysis of complex Immunological problems to reach sustained conclusions using logical principles. | Project report submission. | PG/PLO2/Project/Viva-voce | 100% students will undertake and complete the dissertation | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \*Comprehensive Exam | PG/PLO2/CE Framework |
| 3 | The student shall be able to use and apply modern IT tools in relation to Immunology. | The student will be able to use tool show problem solving skills to develop, plan and implement practical solutions within a diverse range of Immunologydivisions. | \*Comprehensive Exam | PG/PLO3/Quiz/class tests/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to interpret and comprehend research problems, propose solutions and prioritize work. | The student will use knowledge and scientifically proven methodologies to perform experiments and result interpretation for the generation of informative data to provide meaningful definitive conclusions. | \* Project Rubrics | PG/PLO4/viva-voce | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥75% in exit survey. |
| \*Comprehensive Exam | PG/PLO4/CE Framework |
| 5 | The student shall be able to employ effective communication skills on various topics of biosciences and Immunology | The student will be able to develop effective communication skills on various disciplines of Immunology with community, apply knowledge to become effective written and oral communicators in their profession with tenacity in multidisciplinary settings. | Rubrics Communication skills |  | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | PG/PLO5/ BC |
| \*Comprehensive Exam | PG/PLO5/CE Framework |
| 6 | The student shall be able to attain leadership skills and perform responsibly as an individual, and as a member in diverse teams in multidisciplinary settings. | The student will demonstrate effectively as an individual and as a member or leader of team in diverse disciplines and cultures of Immunologyfor achieving logical rationale. | \* Behavioural Science rubrics |  | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | PG/PLO6/BS |
| \*Comprehensive Exam | PG/PLO6/CE Framework |
| 7 | The student shall be able to developinto a responsible global citizen. | The student will recognize the responsibility of being a global citizen. | Rubrics FBL |  | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| PG/PLO7/ |
| PG/PLO7/CE Framework |
| 8 | The student shall practice ethical behavior and shall know the ethical issues associated with current Immunology research | The student will apply to intercede with in the defined limits of bioethical principles to be implemented in the immunology research and academia. | \*Plagiarism Checking of Project report, |  | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \* Comprehensive Exam | PG/PLO8/CE Framework |  |  |  |
| 9 | The student shall be able to develop management and entrepreneurship skills. | The student will demonstrate knowledge and understanding of the technical and management principles in order to achieve the organizational goal in multidisciplinary environments. | Section 7of comprehensive exam.  ----------------- \* Project report submission. | PG/PLO9/EMP | 70% students shall score ≧ 60 % (Grade B or above)  100% students shall submit the project reports. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | PG/PLO9/CE Framework |  | UG/PLO/ |  |
| 10 | The student shall be able to evaluate intellectual curiosity, and reflect the habit of life long learning. | The student will develop technical skills which will enable effective lifelong learning in the field of health and allied sciences. |  |  | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | UG/PLO/  Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Section 8 of Comprehensive Exam | PG/PLO10/CE Framework |
| 11 | The student shall be able to analyze the interrelationship between environment, social and economic sustainability. | The student will demonstrate knowledge and understanding of human biological system and their place in the natural environment, recognize the significance of societal and environmental contexts with special stress on sustainable development. | \*Section 9 of Comprehensive Exam | PG/PLO11/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | UG/PLO/  Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 12 | The student shall be able to apply biotechnology to fulfil societal needs from time to time. | The student will analyze and investigate professional, ethical, societal, environmental and economic responsibility to the professional practice. | \*Comprehensive Exam, | PG/PLO12/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) |  |

**5.10.7 Student Learning Assessment for M. Sc. Immunology**

## Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PEO/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** | **PEO 11** | **PEO 12** |
| PLO 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 3 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 5 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 6 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 7 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 8 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 9 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 10 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 11 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 12 |  |  |  |  |  |  |  |  |  |  |  |  |

**5.11 Programme– M. Sc. Medical Microbiology**

## **5.11.1 Mission Statement**

|  |
| --- |
| To provide advanced education in the area of medical microbiology and in the futuristic and emerging frontier areas of knowledge, learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong, yearning for perfection and courage of conviction and action. |

## **5.11.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
|  | |
|  | The student shall be able to develop concepts in theoretical and applied aspects of medical microbiology. |
|  | The student shall be able to demonstrate systematic understanding of fundamental relevant questions and practical skills related tomedical microbiology. |
|  | The student shall be able to use and apply modern IT tools in relation to medical microbiology. |
|  | The student shall be able to interpret and comprehend research problems, propose solutions and prioritize work. |
|  | The student shall be able to employ effective communication skills on various topics of biosciences and medical microbiology. |
|  | The student shall be able to attain leadership skills and perform responsibly as an individual, and as a member in diverse teams in multidisciplinary settings. |
|  | The student shall be able to developinto a responsible global citizen. |
|  | The student shall practice ethical behavior and shall know the ethical issues associated with current medical microbiologyresearch |
|  | The student shall be able to develop management and entrepreneurship skills. |
|  | The student shall be able to evaluate intellectual curiosity, and reflect the habit of life long learning. |
|  | The student shall be able to analyze the interrelationship between environment, social and economic sustainability. |
|  | The student shall be able to apply virology to fulfill societal needs from time to time. |

**5.11.3 Programme Operational Objectives**

|  |
| --- |
| The M.Sc. Medical Microbiology programme aims to help achieve the University’s goal of achieving academic excellence by providing valuable resources to students. |
| The programme will provide opportunities to the faculty and staff   to regularly upgrade their knowledge and skills by facilitating their participation in professional development programmes. |
| The programme will demonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| The programme aims to continuously strive to build strong industry interaction, alumni networks and empanelment of expertise from industry. |
| The programme will improve processes and systems with an aim to attainnational and international accreditations. |
| The programme will support students in order to facilitate campus recruitment, higher education or starting their own ventures. |
| The programme will actethically to ensure transparency and good governance **while discharging** various  responsibilities to its  stakeholders and execution of policies and programs |
| The programme will createopportunities forinternational exposure for its students and faculty |

**5.11.4 Programme Learning Outcomes**

|  |  |  |
| --- | --- | --- |
| **Intended Learning Outcomes** | | |
| 1 |  | The student will be able to define integrated approach to knowledge factual and theoretical basis of medical microbiologyon the molecular, cellular, and organism levels. |
| 2 |  | The student will develop critical skills for the analysis of complex medical microbiologyproblems to reach sustained conclusions using logical principles. |
| 3 |  | The student will be able to use IT tool show problem solving skills to develop, plan and implement practical solutions within a diverse range of medical microbiologydivisions. |
| 4 |  | The student will use knowledge and scientifically proven methodologies to perform experiments and result interpretation for the generation of informative data to provide meaningful definitive conclusions. |
| 5 |  | The student will be able to develop effective communication skills on various disciplines of medical microbiologywith community, apply knowledge to become effective written and oral communicators in their profession with tenacity in multidisciplinary settings |
| 6 |  | . The student will demonstrate effectively as an individual and as a member or leader of team in diverse disciplines and cultures of medical microbiologyfor achieving logical rationale. |
| 7 |  | The student will recognize the responsibility of being a global citizen. |
| 8 |  | The student will apply to intercede with in the defined limits of bioethical principles to be implemented in the medical microbiologyresearch and academia. |
| 9 |  | The student will demonstrate knowledge and understanding of the technical and management principles in order to achieve the organizational goal in multidisciplinary environments. |
| 10 |  | The student will develop technical skills which will enable effective lifelong learning in the field of health and allied sciences. |
| 11 |  | The student will demonstrate knowledge and understanding of human biological system and their place in the natural environment, recognize the significance of societal and environmental contexts with special stress on sustainable development. |
| 12 |  | The student will analyze and investigate professional, ethical, societal, environmental and economic responsibility to the professional practice. |

**5.11.5 Programme Operational Outcomes**

|  |  |  |
| --- | --- | --- |
| **Operational Outcomes** | | |
| 1 |  | The M.Sc. Medical Microbiology programme will help to achieve the University’s goal of achieving academic excellence by providing valuable resources to students. |
| 2 |  | The programme will provide environment for innovation and research and academic facilities, technological resources for the intellectual growth of faculty and students |
| 3 |  | The programme will facilitate resources to cater diverse need of the students and faculty to achieve academia excellence. |
| 4 |  | The programme will develop building of strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training. |
| 5 |  | The programme will **develop infrastructure and resources to** attainnational and international accreditations. |
| 6 |  | The programme will extent support to the students to provide employment , avenues for higher education and starting their own ventures. |
| 7 |  | The programme will **ensure** transparency and good governance  by inculcating ethics and values in teaching theory and research |
| 8 |  | The programme will invites delegates and speakers in conferences and seminars and provide various other opportunities for global exposure |

**5.11.6 Programme Educational Outcome Assessment for M.Sc. Medical Microbiology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall be able to develop concepts in theoretical and applied aspects of medical microbiology | The student will be able to define integrated approach to knowledge factual and theoretical basis of medical microbiologyon the molecular, cellular, and organism levels. | \*Comprehensive Exam | PG/PLO1/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey. | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall be able to demonstrate systematic understanding of fundamental relevant questions and practical skills related to medical microbiology. | The student will develop critical skills for the analysis of complex medical microbiologyproblems to reach sustained conclusions using logical principles. | Project report submission. | PG/PLO2/Project/Viva-voce | 100% students will undertake and complete the dissertation | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \*Comprehensive Exam | PG/PLO2/CE Framework |
| 3 | The student shall be able to use and apply modern IT tools in relation to medical microbiology. | The student will be able to use IT tool show problem solving skills to develop, plan and implement practical solutions within a diverse range of medical microbiologydivisions. | \*Comprehensive Exam | PG/PLO3/Quiz/class tests/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to interpret and comprehend research problems, propose solutions and prioritize work. | The student will use knowledge and scientifically proven methodologies to perform experiments and result interpretation for the generation of informative data to provide meaningful definitive conclusions. | \* Project Rubrics | PG/PLO4/viva-voce | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | PG/PLO4/CE Framework |
| 5 | The student shall be able to employ effective communication skills on various topics of biosciences and medical microbiology. | The student will be able to develop effective communication skills on various disciplines of medical microbiologywith community, apply knowledge to become effective written and oral communicators in their profession with tenacity in multidisciplinary settings. | Rubrics Communication skills |  | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | PG/PLO5/ BC |
| \*Comprehensive Exam | PG/PLO5/CE Framework |
| 6 | The student shall be able to attain leadership skills and perform responsibly as an individual, and as a member in diverse teams in multidisciplinary settings. | The student will demonstrate effectively as an individual and as a member or leader of team in diverse disciplines and cultures of virology for achieving logical rationale. | \* Behavioural Science rubrics |  | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | PG/PLO6/BS |
| \*Comprehensive Exam | PG/PLO6/CE Framework |
| 7 | The student shall be able to developinto a responsible global citizen. | The student will recognize the responsibility of being a global citizen. | Rubrics FBL |  | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| PG/PLO7/ |
| PG/PLO7/CE Framework |
| 8 | The student shall practice ethical behavior and shall know the ethical issues associated with current medical microbiologyresearch | The student will apply to intercede with in the defined limits of bioethical principles to be implemented in the medical microbiologyresearch and academia. | \*Plagiarism Checking of Project report, |  | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \* Comprehensive Exam | PG/PLO8/CE Framework |  |  |  |
| 9 | The student shall be able to develop management and entrepreneurship skills. | The student will demonstrate knowledge and understanding of the technical and management principles in order to achieve the organizational goal in multidisciplinary environments. | Section 7of comprehensive exam.  ----------------- \* Project report submission. | PG/PLO9/EMP | 70% students shall score ≧ 60 % (Grade B or above)  100% students shall submit the project reports. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | PG/PLO9/CE Framework |  | PG/PLO/ |  |
| 10 | The student shall be able to evaluate intellectual curiosity, and reflect the habit of life long learning. | The student will develop technical skills which will enable effective lifelong learning in the field of health and allied sciences. |  |  | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | PG/PLO/  Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Section 8 of Comprehensive Exam | PG/PLO10/CE Framework |
| 11 | The student shall be able to analyze the interrelationship between environment, social and economic sustainability. | The student will demonstrate knowledge and understanding of human biological system and their place in the natural environment, recognize the significance of societal and environmental contexts with special stress on sustainable development. | \*Section 9 of Comprehensive Exam | PG/PLO11/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | PG/PLO/  Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 12 | The student shall be able to apply medical microbiologyto fulfil societal needs from time to time. | The student will analyze and investigate professional, ethical, societal, environmental and economic responsibility to the professional practice. | \*Comprehensive Exam, | PG/PLO12/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) |  |

**5.11.7 Student Learning Assessment for M. Sc. Medical Microbiology**

## Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PEO/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** | **PEO 11** | **PEO 12** |
| PLO 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 3 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 5 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 6 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 7 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 8 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 9 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 10 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 11 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 12 |  |  |  |  |  |  |  |  |  |  |  |  |

**5.12 Programme– M. Sc. Virology**

## **5.12.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide advanced education in the area of virologyand in the futuristic and emerging frontier areas of knowledge, learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong, yearning for perfection and courage of conviction and action. |

## **5.12.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
|  | |
|  | The student shall be able to develop concepts in theoretical and applied aspects of Virology |
|  | The student shall be able to demonstrate systematic understanding of fundamental relevant questions and practical skills related to Virology |
|  | The student shall be able to use and apply modern IT tools in relation to Virology |
|  | The student shall be able to interpret and comprehend research problems, propose solutions and prioritize work. |
|  | The student shall be able to employ effective communication skills on various topics of biosciences and Virology |
|  | The student shall be able to attain leadership skills and perform responsibly as an individual, and as a member in diverse teams in multidisciplinary settings. |
|  | The student shall be able to developinto a responsible global citizen. |
|  | The student shall practice ethical behavior and shall know the ethical issues associated with current virology research |
|  | The student shall be able to develop management and entrepreneurship skills. |
|  | The student shall be able to evaluate intellectual curiosity, and reflect the habit of life long learning. |
|  | The student shall be able to analyze the interrelationship between environment, social and economic sustainability. |
|  | The student shall be able to apply virology to fulfill societal needs from time to time. |

|  |
| --- |
| **5.12.3 Programme Operational Objectives**The M.Sc. Virology programme aims to help achieve the University’s goal of achieving academic excellence by providing valuable resources to students. |
| The programme will provide opportunities to the faculty and staff   to regularly upgrade their knowledge and skills by facilitating their participation in professional development programmes. |
| The programme will demonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| The programme aims to continuously strive to build strong industry interaction, alumni networks and empanelment of expertise from industry. |
| The programme will improve processes and systems with an aim to attainnational and international accreditations. |
| The programme will support students in order to facilitate campus recruitment, higher education or starting their own ventures. |
| The programme will actethically to ensure transparency and good governance **while discharging** various  responsibilities to its  stakeholders and execution of policies and programs |
| The programme will createopportunities forinternational exposure for its students and faculty |

**5.12.4 Programme Learning Outcomes**

|  |  |  |
| --- | --- | --- |
| **Intended Learning Outcomes** | | |
| 1 |  | The student will be able to define integrated approach to knowledge factual and theoretical basis of Virology on the molecular, cellular, and organism levels. |
| 2 |  | The student will develop critical skills for the analysis of complex virology problems to reach sustained conclusions using logical principles. |
| 3 |  | The student will be able to use IT tool show problem solving skills to develop, plan and implement practical solutions within a diverse range of virology divisions. |
| 4 |  | The student will use knowledge and scientifically proven methodologies to perform experiments and result interpretation for the generation of informative data to provide meaningful definitive conclusions. |
| 5 |  | The student will be able to develop effective communication skills on various disciplines of virology with community, apply knowledge to become effective written and oral communicators in their profession with tenacity in multidisciplinary settings. |
| 6 |  | The student will demonstrate effectively as an individual and as a member or leader of team in diverse disciplines and cultures of virology for achieving logical rationale. |
| 7 |  | The student will recognize the responsibility of being a global citizen. |
| 8 |  | The student will apply to intercede with in the defined limits of bioethical principles to be implemented in the virology research and academia. |
| 9 |  | The student will demonstrate knowledge and understanding of the technical and management principles in order to achieve the organizational goal in multidisciplinary environments. |
| 10 |  | The student will develop technical skills which will enable effective lifelong learning in the field of health and allied sciences. |
| 11 |  | The student will demonstrate knowledge and understanding of human biological system and their place in the natural environment, recognize the significance of societal and environmental contexts with special stress on sustainable development. |
| 12 |  | The student will analyze and investigate professional, ethical, societal, environmental and economic responsibility to the professional practice. |

**5.12.5 Programme Operational Outcomes**

|  |  |  |
| --- | --- | --- |
| **Operational Outcomes** | | |
| 1 |  | The M.Sc. Virology programme will help to achieve the University’s goal of achieving academic excellence by providing valuable resources to students. |
| 2 |  | The programme will provide environment for innovation and research and academic facilities, technological resources for the intellectual growth of faculty and students |
| 3 |  | The programme will facilitate resources to cater diverse need of the students and faculty to achieve academia excellence. |
| 4 |  | The programme will develop building of strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training. |
| 5 |  | The programme will **develop infrastructure and resources to** attainnational and international accreditations. |
| 6 |  | The programme will extent support to the students to provide employment , avenues for higher education and starting their own ventures. |
| 7 |  | The programme will **ensure** transparency and good governance  by inculcating ethics and values in teaching theory and research |
| 8 |  | The programme will invites delegates and speakers in conferences and seminars and provide various other opportunities for global exposure |

**5.12.6 Programme Educational Outcome Assessment for M.Sc. Virology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall be able to develop concepts in theoretical and applied aspects of Virology | The student will be able to define integrated approach to knowledge factual and theoretical basis of Virology on the molecular, cellular, and organism levels. | \*Comprehensive Exam | PG/PLO1/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey. | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall be able to demonstrate systematic understanding of fundamental relevant questions and practical skills related to Virology | The student will develop critical skills for the analysis of complex virology problems to reach sustained conclusions using logical principles. | Project report submission. | PG/PLO2/Project/Viva-voce | 100% students will undertake and complete the dissertation | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \*Comprehensive Exam | PG/PLO2/CE Framework |
| 3 | The student shall be able to use and apply modern IT tools in relation to Virology. | The student will be able to use IT tool show problem solving skills to develop, plan and implement practical solutions within a diverse range of virology divisions. | \*Comprehensive Exam | PG/PLO3/Quiz/class tests/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to interpret and comprehend research problems, propose solutions and prioritize work. | The student will use knowledge and scientifically proven methodologies to perform experiments and result interpretation for the generation of informative data to provide meaningful definitive conclusions. | \* Project Rubrics | PG/PLO4/viva-voce | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | PG/PLO4/CE Framework |
| 5 | The student shall be able to employ effective communication skills on various topics of biosciences and Virology | The student will be able to develop effective communication skills on various disciplines of virology with community, apply knowledge to become effective written and oral communicators in their profession with tenacity in multidisciplinary settings. | Rubrics Communication skills |  | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | PG/PLO5/ BC |
| \*Comprehensive Exam | PG/PLO5/CE Framework |
| 6 | The student shall be able to attain leadership skills and perform responsibly as an individual, and as a member in diverse teams in multidisciplinary settings. | The student will demonstrate effectively as an individual and as a member or leader of team in diverse disciplines and cultures of virology for achieving logical rationale. | \* Behavioural Science rubrics |  | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | PG/PLO6/BS |
| \*Comprehensive Exam | PG/PLO6/CE Framework |
| 7 | The student shall be able to developinto a responsible global citizen. | The student will recognize the responsibility of being a global citizen. | Rubrics FBL |  | 70% students shall score ≧ 65 % (Grade B or above) | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| PG/PLO7/ |
| PG/PLO7/CE Framework |
| 8 | The student shall practice ethical behavior and shall know the ethical issues associated with current virological research | The student will apply to intercede with in the defined limits of bioethical principles to be implemented in the virology research and academia. | \*Plagiarism Checking of Project report, |  | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \* Comprehensive Exam | PG/PLO8/CE Framework |  |  |  |
| 9 | The student shall be able to develop management and entrepreneurship skills. | The student will demonstrate knowledge and understanding of the technical and management principles in order to achieve the organizational goal in multidisciplinary environments. | Section 7of comprehensive exam.  ----------------- \* Project report submission. | PG/PLO9/EMP | 70% students shall score ≧ 60 % (Grade B or above)  100% students shall submit the project reports. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | PG/PLO9/CE Framework |  | PG/PLO/ |  |
| 10 | The student shall be able to evaluate intellectual curiosity, and reflect the habit of life long learning. | The student will develop technical skills which will enable effective lifelong learning in the field of health and allied sciences. |  |  | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | PG/PLO/  Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Section 8 of Comprehensive Exam | PG/PLO10/CE Framework |
| 11 | The student shall be able to analyze the interrelationship between environment, social and economic sustainability. | The student will demonstrate knowledge and understanding of human biological system and their place in the natural environment, recognize the significance of societal and environmental contexts with special stress on sustainable development. | \*Section 9 of Comprehensive Exam | PG/PLO11/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) | Student Exit Survey | PG/PLO/  Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 12 | The student shall be able to apply virology to fulfil societal needs from time to time. | The student will analyze and investigate professional, ethical, societal, environmental and economic responsibility to the professional practice. | \*Comprehensive Exam, | PG/PLO12/CE Framework | 70% students shall score ≧ 60 % (Grade B or above) |  |

**5.12.7 Student Learning Assessment for M. Sc. Virology**

## Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PEO/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** | **PEO 11** | **PEO 12** |
| PLO 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 3 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 5 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 6 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 7 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 8 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 9 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 10 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 11 |  |  |  |  |  |  |  |  |  |  |  |  |
| PLO 12 |  |  |  |  |  |  |  |  |  |  |  |  |

### **5.13 Programme- B.Sc. (H) Biotechnology**

## **5.13.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To consign leading edge education in all areas of Biotechnology with a futuristic and universal signification towards innovatory aspects of knowledge, global learning and creative technologies. The systematic inclusion of core, allied and specialisation courses catering to comprehensive learning while developing their holistic personality in terms of human values having pride in their heritage and culture, inculcating sensibility as well courage of conviction and action with continued yearning towards perfection. Program mission is to imbibe and integrate professional skills in biology for customising industrial, research or entrepreneurship ventures. |

## **5.13.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
| **Educational Goals** | |
|  | The student shall be able to develop conceptual learning in theoretical and applied aspects of biotechnology. |
|  | The student shall be able to demonstrate systematic insights with critical problem solving analysis and practical skills related to biotechnology. |
|  | The student shall be able to use and apply modern IT tools and skills for statistical and technical data analysis in relation to Biotechnology. |
|  | The student shall be able to elucidate and comprehend research problems, propose solutions and prioritize work. |
|  | The student shall be self reliant for articulating effective relationship building and communication skills in the direction of various topics of biosciences and biotechnology. |
|  | The student shall be able to exhibit individual leadership skills and team work coordination for conflict resolution in multidisciplinary settings. |
|  | The student shall be able to drive their technical knowledge to inculcate bearing towards globalisation, economic and environmental conservation. |
|  | The student shall practice ethical behaviour and shall know the ethical issues associated with current Biotechnological research. |
|  | The student shall be able to evolve management and entrepreneurship skills through inventive measures. |
|  | The student shall be able to evaluate intellectual curiosity, and reflect the habit of life long learning to create new knowledge in the field of Biotechnology. |

**5.13.3 Programme Operational Objectives**

|  |
| --- |
| The B.Sc.(Biotechnology) programme aims to create academic excellence by providing valuable resources to students |
| The program will provide environment for innovation and research for the intellectual growth of faculty and students |
| The program willdemonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| The program will strive tobuild strong industry interaction, alumni networks and empanelment of expertise from industry. |
| The program will continually improve processes and systems with an aim to attain national and international accreditations and institutional ranking. |
| The programme willextend support to the students to create employment opportunities and develop entrepreneurial skills. |
| The programme will act ethically to ensure good governance in discharge of responsibilities and execution of policies and programs |
| The programme will create opportunities for international exposure for its students and faculty. |
|  |

**5.13.4 Programme Learning Outcomes**

|  |  |
| --- | --- |
| **Intended Learning Outcomes** | |
| 1 | The student will be able to characterise key avenues connected to fundamental techniques and resources for effective learning of the basic biotechnological concepts. |
| 2 | The student will be able to acquire critical skills to analyze and propose sustainable solutions using logical reasoning for biotechnological problems in a holistic manner. |
| 3 | The student will be able to execute analytical skills to solve biological problems by using modern IT tools in relation to Biotechnology. |
| 4 | The student will be able to arrange, review and exhibit innovative and sustainable conclusions through systematic experimental investigations and informative data implications of biotechnological data. |
| 5 | The student will be able to manifest interpersonal skills and relationship building through good communication skills and attain logical rationale for efficient contribution on various topics in biotechnology. |
| 6 | The students will be able to validate their prowess as global citizen with economic and environment preservation capacities. |
| 7 | The student will be able to analyse and illustrate both technical and management deftness for achieving organisational goal in multidisciplinary environments. |
| 8 | The student will be able to manifest biological understanding of the molecular, cellular and systems level in relation to the environmental effects so as to comply to ethical, societal and sustainable development needs. |
| 9 | The student will be able to extend ethics, management and leadership qualities with societal testimony while decision making towards entrepreneurial projects. |
| 10 | The student will be able to exercise life-long learning literacy to move forth in Biotechnology applications maintaining the bioethical constraints in research and industry. |

**5.13.5** **Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Outcomes** | |
| 1 | BSc (H) Biotechnology programme will promote use of appropriate methodology and pedagogical tools for teaching, learning and development. |
| 2 | The curriculum of the programme will be contemporary and relevant to meet research and industry requirements and benchmarked on global standards by incorporating feedback from all the stakeholders. |
| 3 | The programme will provide academic facilities, technological resources for teaching and learning according to diverse needs of the students |
| 4 | The programme will develop and maintain strong relationship with research institutes, alumni students and industry experts. |
| 5 | The programme will improve processes to attain and sustain a good national and international ranking. |
| 6 | The programme will extend various opportunities for global exposure and will support all the students for quality placements or join family business or start their own venture |
| 7 | The programme will establish an internal quality cell for operational quality and process improvement for students. |
| 8 | The programme will create opportunities for international exposure for its students and faculty. |

**5.13.6 Programme Educational Outcome Assessment for B. Sc. Biotechnology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall be able to develop conceptual learning in theoretical and applied aspects of biotechnology. | The student will be able to characterise key avenues connected to fundamental techniques and resources for effective learning of the basic biotechnological concepts. | \*Comprehensive Exam | UG/PLO1/CE Framework | 70% students shall pass the exam. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall be able to demonstrate systematic insights with critical problem solving analysis and practical skills related to biotechnology. | The student will be able to acquire critical skills to analyze and propose sustainable solutions using logical reasoning for biotechnological problems in a holistic manner. | Project Report submission | UG/PLO2/CE Framework | 100% students will undertake and complete the project report. | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \*Comprehensive Exam | UG/PLO2/CE Framework |
| 3 | The student shall be able to use and apply modern IT tools and skills for statistical and technical data analysis in relation to Biotechnology. | The student will be able to execute analytical skills to solve biological problems by using modern IT tools in relation to Biotechnology. | Section 3 of comprehensive exam. | UG/PLO3/Quiz/class tests/CE Framework | 80% students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to elucidate and comprehend research problems, propose solutions and prioritize work. | The student will be able to arrange, review and exhibit innovative and sustainable conclusions through systematic experimental investigations and informative data implications of biotechnological data. | \* Project Rubrics | UG/PLO4/viva-voce | 80% students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | UG/PLO4/CE Framework |
| 5 | The student shall be self reliant for articulating effective relationship building and communication skills in the direction of various topics of biosciences and biotechnology. | The student will be able to manifest interpersonal skills and relationship building through good communication skills and attain logical rationale for efficient contribution on various topics in biotechnology. | \*Rubrics (Communication skills) | UG/PLO5/ | 80% students shall achieve a minimum of satisfactory outcome attainment level. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  |  |
|  | UG/PLO5/CE Framework |
| 6 | The student shall be able to exhibit individual leadership skills and team work coordination for conflict resolution in multidisciplinary settings. | The students will be able to validate their prowess as global citizen with economic and environment preservation capacities. |  |  | 80% students shall achieve a minimum of satisfactory outcome attainment level. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Rubrics (Behavioural Sciences) | UG/PLO6/ |
|  | UG/PLO6/CE Framework |
| 7 | The student shall be able to drive their technical knowledge to inculcate bearing towards globalisation, economic and environmental conservation. | The student will be able to analyse and illustrate both technical and management deftness for achieving organisational goal in multidisciplinary environments. | Rubrics (FBL) |  | 80% students shall achieve a minimum of satisfactory outcome attainment level. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO7/ |
| Rubrics FBL.section 9 of the comprehensive exam | UG/PLO7/CE Framework |
| 8 | The student shall practice ethical behaviour and shall know the ethical issues associated with current Biotechnological research. | The student will be able to manifest biological understanding of the molecular, cellular and systems level in relation to the environmental effects so as to comply to ethical, societal and sustainable development needs. | \*Plagiarism Checking of project |  | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Feedback of External Internship Guide |  | The External Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \*Rubrics (Behavioural Science)  Rubrics |  |  |  |  |
| 9 | The student shall be able to evolve management and entrepreneurship skills through inventive measures. | The student will be able to extend ethics, management and leadership qualities with societal testimony while decision making towards entrepreneurial projects. | Section 7of comprehensive exam.  ----------------- \* Project report submission. | UG/PLO9/CE Framework | 70% students shall pass the exam  100% students shall submit the project reports. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | . |
| 10 | The student shall be able to evaluate intellectual curiosity, and reflect the habit of life long learning to create new knowledge in the field of Biotechnology. | The student will be able to exercise life-long learning literacy to move forth in Biotechnology applications maintaining the bioethical constraints in research and industry. | Section 8 of comprehensive exam |  | 70% students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | UG/PLO10/CE Framework |

**5.13.7 Student Learning Assessment for B.Sc. (H) Biotechnology**

## Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** |
| PLO 1 |  |  |  |  |  |  |  |  |  |  |
| PLO 2 |  |  |  |  |  |  |  |  |  |  |
| PLO 3 |  |  |  |  |  |  |  |  |  |  |
| PLO 4 |  |  |  |  |  |  |  |  |  |  |
| PLO 5 |  |  |  |  |  |  |  |  |  |  |
| PLO 6 |  |  |  |  |  |  |  |  |  |  |
| PLO 7 |  |  |  |  |  |  |  |  |  |  |
| PLO 8 |  |  |  |  |  |  |  |  |  |  |
| PLO 9 |  |  |  |  |  |  |  |  |  |  |
| PLO 10 |  |  |  |  |  |  |  |  |  |  |

### **5.14 Programme B.Sc. (H) Medical Biotechnology**

## **5.14.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide applied education in the area of Medical Biotechnology in context of its universal implication in related areas of applied science and in the futuristic and emerging frontier areas of knowledge, learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong, yearning for perfection and courage of conviction and action. The course applies technological and learning of diagnostic methods to biological systems and living organisms to customize product and process and for excellence in research and innovation. The mission is to facilitate nurturing of ideas by promoting emerging technological and knowledge based innovative ventures. |

## **5.14.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
|  | |
|  | The student shall be able to develop conceptual as well as applied concepts in theoretical and applied aspects of Medical biotechnology |
|  | The student shall be able to demonstrate strategic thinking for Problem Analysis and practical skills related to Medical biotechnology. |
|  | The student shall be able to use and apply latest IT tools to analyze, biological, statistical and technical data in relation to Medical Biotechnology. |
|  | The student shall be able to interpret and comprehend research problems, propose solutions and prioritize work. |
|  | The student shall be confident in interpersonal skills relationship-building and communication on various topics of biosciences and Medical biotechnology |
|  | The student shall be able to demonstrate Team work and Conflict resolution through leadership qualities. |
|  | The student shall be able to execute their knowledge and technical skills for the globalization and environmental conservation |
|  | The student shall be able to practice the ethical principles and understand their social responsibilities. |
|  | The student shall be able to develop entrepreneurial orientation through innovative and creative decision making |
|  | The student shall be able to develop lifelong learning approach to create new knowledge from existing knowledge. |

**5.14.3 Programme Operational Objectives**

|  |
| --- |
| The B.Sc. (Medical Biotechnology) programme aims to help achieve the University’s goal of achieving academic excellence by providing valuable resources to students. |
| The programme will provide opportunities to the faculty and staff   to regularly upgrade their knowledge and skills by facilitating their participation in professional development programmes. |
| The programme will demonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| The programme aims to continuously strive to build strong industry interaction, alumni networks and empanelment of expertise from industry. |
| The programme will improveprocesses and systems with an aim to attain national and international accreditations. |
| The programme will support students in order to facilitate campus recruitment, higher education or starting their own ventures. |
| The programme will actethically to ensure transparency and good governance **while discharging** various  responsibilities to its  stakeholders and execution of policies and programs |
| The programme will createopportunities forinternational exposure for its students and faculty |

**5.14.4 Programme Learning Outcomes**

|  |  |  |
| --- | --- | --- |
| **Intended Learning Outcomes** | | |
| 1 |  | The student will be able to define strategic approach to knowledge factual and theoretical basis of Medical Biotechnology on the molecular, cellular, and organism levels. |
| 2 |  | The student will have decision making capabilities to find apt and sustainable solutions of complex medical biotechnological problems to reach sustained conclusions using logical principles. |
| 3 |  | The student will apply modern IT tools for acquisition and analysis of biological data of medical biotechnology divisions. |
| 4 |  | The student will be able to demonstrate innovative and sustainable approach to perform experiments and result interpretation for the generation of informative data to provide meaningful definitive conclusions |
| 5 |  | The student will confident in communication, interpersonal skills and relationship-building in diverse disciplines and cultures of medical biotechnology for achieving logical rationale |
| 6 |  | The student will be a responsible global citizen with environment conserving attitude. |
| 7 |  | The student will demonstrate knowledge and understanding of the technical and management principles in order to achieve the organizational goal in multidisciplinary environments. |
| 8 |  | The student will demonstrate knowledge and understanding of human biological system and their place in the natural environment recognize the significance of societal and environmental contexts with special stress on sustainable development. |
| 9 |  | The student will demonstrate ethically, environmentally and socially aware attitude |
| 10 |  | The student will apply to intercede with in the defined limits of bioethical principles to be implemented in the Biomedical research and academia. |
|  |  |  |
|  |  |  |

**5.14.5 Programme Operational Outcomes**

|  |  |  |
| --- | --- | --- |
| **Operational Outcomes** | | |
| 1 |  | The B.Sc. (Medical Biotechnology) programme will help to achieve the University’s goal of achieving academic excellence by providing valuable resources to students. |
| 2 |  | The programme will provide environment for innovation and research and academic facilities, technological resources for the intellectual growth of faculty and students |
| 3 |  | The programme will facilitate resources to cater diverse need of the students and faculty to achieve academia excellence. |
| 4 |  | The programme will develop building of strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training.. |
| 5 |  | The programme will **develop infrastructure and resources to** attain national and international accreditations. |
| 6 |  | The programme will extent support to the students to provide employment , avenues for higher education and starting their own ventures. |
| 7 |  | The programme will **ensure** transparency and good governance  by inculcating ethics and values in teaching theory and research |
| 8 |  | The programme will invites delegates and speakers in conferences and seminars and provide various other opportunities for global exposure |

**5.14.6 Programme Educational Outcome Assessment for B.Sc. (Medical) Biotechnology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall be able to develop conceptual as well as applied concepts in theoretical and applied aspects of Medical biotechnology | The e student will be able to define strategic approach to knowledge factual and theoretical basis of Medical Biotechnology on the molecular, cellular, and organism levels. | \*Comprehensive Exam | UG/PLO1/CE Framework | 70% students shall pass the exam. | Student Exit Survey. | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall be able to demonstrate strategic thinking for Problem Analysis and practical skills related to Medical biotechnology. | The student will have decision making capabilities to find apt and sustainable solutions of complex medical biotechnological problems to reach sustained conclusions using logical principles | Project report submission. | UG/PLO2/Project/Viva-voce | 100% students will undertake and complete the dissertation | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \*Comprehensive Exam | UG/PLO2/CE Framework |
| 3 | The student shall be able to use and apply latest IT tools to analyze, biological, statistical and technical data in relation to Medical Biotechnology. | The student will apply modern IT tools for acquisition and analysis of biological data of medical biotechnology divisions. | \*Comprehensive Exam | UG/PLO3/Quiz/class tests/CE Framework | 80% students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to interpret and comprehend research problems, propose solutions and prioritize work. | The student will be able to demonstrate innovative and sustainable approach to perform experiments and result interpretation for the generation of informative data to provide meaningful definitive conclusions | \* Project Rubrics | UG/PLO4/viva-voce | 80% students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | UG/PLO4/CE Framework |
| 5 | The student shall be confident in interpersonal skills relationship-building and communication on various topics of biosciences and Medical biotechnology | The student will confident in communication, interpersonal skills and relationship-building in diverse disciplines and cultures of medical biotechnology for achieving logical rationale | Rubrics Communication skills |  | 80% students shall achieve a minimum “Satisfactory” outcome attainment level | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | UG/PLO5/ BC |
| \*Comprehensive Exam | UG/PLO5/CE Framework |
| 6 | The student shall be able to demonstrate Team work and Conflict resolution through leadership qualities.settings. | The student will be a responsible global citizen with environment conserving attitude. | \* Behavioural Science rubrics |  | 80% students shall achieve a minimum “Satisfactory” outcome attainment level | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | UG/PLO6/BS |
| \*Comprehensive Exam | UG/PLO6/CE Framework |
| 7 | The student shall be able to execute their knowledge and technical skills for the globalization and environmental conservation. | The student will demonstrate knowledge and understanding of the technical and management principles in order to achieve the organizational goal in multidisciplinary environments | Rubrics FBL.section 9 of the comprehensive exam |  | 80% students shall achieve a minimum “Satisfactory” outcome attainment level | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO7/ |
| UG/PLO7/CE Framework |
| 8 | The student shall be able to practice the ethical principles and understand their social responsibilities. | The student will demonstrate knowledge and understanding of human biological system and their place in the natural environment recognize the significance of societal and environmental contexts with special stress on sustainable development. | \*Plagiarism Checking of Project report, |  | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \* Comprehensive Exam | UG/PLO8/CE Framework |  |  |  |
| 9 | The student shall be able to develop entrepreneurial orientation through innovative and creative decision making | The student will demonstrate ethically, environmentally and socially aware attitude | Section 7of comprehensive exam.  ----------------- \* Project report submission. | UG/PLO9/EMP | 70% student shall pass the exam.  100% students shall submit the project reports. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | UG/PLO9/CE Framework |  | UG/PLO/ |  |
| 10 | The student shall be able to develop lifelong learning approach to create new knowledge from existing knowledge. | The student will apply to intercede with in the defined limits of bioethical principles to be implemented in the Biomedical research and academia. | \*Comprehensive Exam, |  | 70% students shall pass th e exam | Student Exit Survey | UG/PLO/  Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Section 8 of Comprehensive Exam | UG/PLO10/CE Framework |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

**5.14.7 Student Learning Assessment for B. Sc.(H) Medical Biotechnology**

## Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PEO /PLO | PLO1 | PLO2 | PLO3 | PLO4 | PLO5 | PLO6 | PLO7 | PLO8 | PLO9 | PLO10 |
| PEO1 | X |  | X |  |  |  | X |  |  | X |
| PEO2 |  | X |  |  |  |  | X |  |  | X |
| PEO3 | X | X | X | X |  |  | X |  |  | X |
| PEO4 | X | X | X | X |  |  |  |  |  |  |
| PEO5 |  |  |  |  | X |  |  |  | X | X |
| PEO6 |  |  |  |  | X | X |  |  | X |  |
| PEO7 | X | X |  | X |  | X | X |  |  |  |
| PEO8 |  |  |  |  |  |  |  | X |  |  |
| PEO9 |  |  |  |  |  |  |  |  | X |  |
| PEO10 |  |  |  |  | X |  |  |  |  | X |

### **5.15 Programme- B.Sc. (Hons) Zoology**

## **5.15.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide applied education in the area of animal sciences in context of its universal implications and extend enquiry beyond Biosciences domain with an approach of competency based learning to adhere to the futuristic industry specific needs and to develop students into a global citizen with environmentally friendly attitude by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong, yearning for perfection and courage of conviction and action. |

## **5.15.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
|  | |
|  | The student shall be able develop conceptual as well as applied knowledge and skills in the field of zoological sciences to attain academic excellence. |
|  | The student shall demonstrate strategic thinking for Problem Analysis and development of Solutions through zoological knowledge |
|  | The student shall be able to use and apply latest IT tools to analyze, biological, statistical and technical big data. |
|  | The student shall be able to demonstrate innovative and sustainable approach in order to solve scientific problems. |
|  | The student shall be confident in interpersonal skills relationship-building and communication. |
|  | The student shall be able to demonstrate Team work and Conflict resolution through leadership qualities. |
|  | The student shall be able to execute their knowledge and technical skills for the globalization and environmental conservation |
|  | The student shall be able to practice the ethical principles and understand their social responsibilities. |
|  | The student shall be able to develop entrepreneurial orientation through innovative and creative decision making. |
|  | The student shall be able to develop lifelong learning approach to create new knowledge from existing knowledge. |

**5.15.3 Programme Operational Objectives**

|  |  |
| --- | --- |
|  | The B.Sc. (Zoology) programme aims to help achieve the University’s goal of achieving academic excellence by providing valuable resources to students |
|  | The programme will facilitate an academically conducive environment for holistic development of students |
|  | The programme will provide environment for innovation and research for the intellectual growth of faculty and students. |
|  | The programme will aim to inculcate core values of the university and ethical conduct amongst students, faculty and staff. |
|  | The programme will encourage cultural diversity and a sense of social and environmental responsibility. |
|  | The programme will facilitate building of strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training. |
|  | The programme will facilitate to create employment opportunities and also support students to develop entrepreneurial skills. |
|  | The B.Sc. (Zoology) programme aims to help achieve the University’s goal of achieving academic excellence by providing valuable resources to students |

**5.15.4 Programme Learning Outcomes**

|  |  |
| --- | --- |
| **Intended Learning Outcomes** | |
|  | The student will develop analytical mindset to find strategic solutions to diverse problems of animal sciences. |
|  | The student will have decision making capabilities to find apt and sustainable solutions to complex problems. |
|  | The student will apply modern IT tools for acquisition and analysis of biological data.in the field of zoological sciences |
|  | The student will be able to demonstrate innovative and sustainable approach in order to solve scientific problems. |
|  | The student will be confident in communication, interpersonal skills and relationship-building. |
|  | The student will be able to demonstrate team work and conflict resolution strategies through leadership qualities |
|  | The student will be a responsible global citizen with environment conserving attitude. |
|  | The student will demonstrate ethically, environmentally and socially aware attitude. |
|  | The student will develop entrepreneurial skills through innovative and creative decision making. |
|  | The student will have lifelong learning approach to create new knowledge from existing knowledge. |

**5.15.5 Programme Operational Outcomes**

|  |  |
| --- | --- |
| POO 1 | The B.Sc. (Zoology) programme aims to help achieve the University’s goal of achieving academic excellence by providing valuable resources to students. |
| POO 2 | The programme will facilitate an academically conducive environment for holistic development of students |
| POO 3 | The programme will provide environment for innovation and research for the intellectual growth of faculty and students. |
| POO 4 | The programme aims to inculcate core values of the university and ethical conduct amongst students, faculty and staff. |
| POO 5 | The programme will encourage cultural diversity and a sense of social and environmental responsibility. |
| POO 6 | The programme will facilitate building of strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training. |
| POO 7 | The programme will facilitate to create employment opportunities and also support students to develop entrepreneurial skills. |

**5.15.6 Programme Educational Outcome Assessment for B.Sc. (Hons) Zoology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall be able develop conceptual as well as applied knowledge and skills in the field of zoological sciences to attain academic excellence. | The student will develop analytical mindset to find strategic solutions to diverse problems of animal sciences.  theoretical basis of Zoology. | \*Comprehensive Exam | UG/PLO1/CE Framework | 70% students shall pass the exam. | Student Exit Survey. | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall demonstrate strategic thinking for Problem Analysis and development of Solutions through zoological knowledge | . The student will have decision making capabilities to find apt and sustainable solutions to complex problems. | Project report submission | UG/PLO2/Project/Viva-voce | 100% students will undertake and complete the dissertation | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \*Comprehensive Exam | UG/PLO2/CE Framework |
| 3 | The student shall be able to use and apply latest IT tools to analyze, biological, statistical and technical big data. | 3. The student will apply modern IT tools for acquisition and analysis of biological data.in the field of zoological sciences | \*Section 3 of Comprehensive Exam | UG/PLO3/Quiz/class tests/CE Framework | 100% students shall able to leverage IT in order to complete their Assignments and Projects | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to demonstrate innovative and sustainable approach in order to solve scientific problems. | The student will be able to demonstrate innovative and sustainable approach in order to solve scientific problems. | Project report submission | UG/PLO4/viva-voce | 100% students shall complete their projects and submit the report | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Comprehensive Exam | UG/PLO4/CE Framework |
| 5 | The student shall be confident in interpersonal skills relationship-building and communication. | . The student will be confident in communication, interpersonal skills and relationship-building. | Rubrics Communication Skills |  | 80% students shall achieve a minimum of ”satisfactory” outcome attainment level. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO5/ BC |
| UG/PLO5/CE Framework |
| 6 | The student shall be able to demonstrate Team work and Conflict resolution through leadership qualities. | . The student will be able to demonstrate team work and conflict resolution strategies through leadership qualities | \* Behavioural Science rubrics |  | 80% students shall achieve a minimum of ”satisfactory” outcome attainment level. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO6/BS |
| UG/PLO6/CE Framework |
| 7 | The student shall be able to execute their knowledge and technical skills for the globalization and environmental conservation. | The student will be a responsible global citizen with environment conserving attitude. | RubricsForeign language, \*Section 9 of Comprehensive Exam |  | 80% students shall achieve a minimum of ”satisfactory” outcome attainment level. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO7/ |
| UG/PLO7/CE Framework |
| 8 | The student shall be able to practice the ethical principles and understand their social responsibilities. | The student will demonstrate ethically, environmentally and socially aware attitude. | \*Plagiarism Checking of Project report, |  | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \* Comprehensive Exam | UG/PLO8/CE Framework |  |  | The University will adhere to zero tolerance towards use of unfair means |
| 9 | The student shall be able to develop management and entrepreneurship skills. | The student will develop entrepreneurial skills through innovative and creative decision making. | \*Section 7 of Comprehensive Exam | UG/PLO9/EMP | 70% students shall pass the exam.  100% students shall submit the project report | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Project report submission | UG/PLO9/CE Framework |  |  |  |
|  |
| 10 | The student shall be able to develop lifelong learning approach to create new knowledge from existing knowledge. | The student will have lifelong learning approach to create new knowledge from existing knowledge. | \*Section 8 of Comprehensive Exam |  | 70% students shall pass the exam. | Student Exit Survey | UG/PLO/ | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO10/CE Framework | Exit Survey |

**5.15.7 Student Learning Assessment for B.Sc. (Hons) Zoology**

|  |
| --- |
| **Matrix Of PEO`s and PLO`s** |
| |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | PEO /PLO | PLO1 | PLO2 | PLO3 | PLO4 | PLO5 | PLO6 | PLO7 | PLO8 | PLO9 | PLO10 | | PEO1 | X |  | X |  |  |  | X |  |  | X | | PEO2 |  | X |  |  |  |  | X |  |  | X | | PEO3 | X | X | X | X |  |  | X |  |  | X | | PEO4 | X | X | X | X |  |  |  |  |  |  | | PEO5 |  |  |  |  | X |  |  |  | X | X | | PEO6 |  |  |  |  | X | X |  |  | X |  | | PEO7 | X | X |  | X |  | X | X |  |  |  | | PEO8 |  |  |  |  |  |  |  | X |  |  | | PEO9 |  |  |  |  |  |  |  |  | X |  | | PEO10 |  |  |  |  | X |  |  |  |  | X | |

**5.16 Programme – B. Tech. Biotechnology**

**5.16.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To impart the advance education at undergraduate level in the area of Biosciences and Biotechnology, to prepare globally accepted, industry ready, smart students equipped with disruptive technologies at par with industry 4.0 and to develop the overall personality of the students by making them not only excellent professionals but also good individuals with excellent human and cultural values along with attributes of courage, conviction and action. |

**5.16.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
| **Educational Goals** | |
|  | The students shall be able to assemble and develop the knowledge in order to attain the academic excellence and recognize how to solve the problems in the area of Bioscience and Biotechnology. |
|  | The student shall demonstrate strategic thinking for analysis and development of solutions through Biotechnological and other related tools. |
|  | The students shall be able to apply the latest tools and technologies to analyze, interpret and solve the biological data. |
|  | The student shall be able to comprehend and interpret the research data to find sustainable solutions for biological problems. |
|  | The students shall be able to develop effective communication skills to enhance interpersonal relationship which will help the students in the placements |
|  | The student shall be able to demonstrate the leadership qualities and work effectively in a team as well as an individual. |
|  | The student shall be able to execute knowledge and develop global citizenship skills to build a sustainable world community for the betterment of Bioscience and Biotechnology |
|  | The student shall be able to implement ethical behavior and demonstrate sensitivity towards various social and cultural issues for the betterment of the society. |
|  | The student shall be able to develop networking and entrepreneurship skills and create strong network with industry, academia and alumini. |
| 10 | The student shall be able to evaluate and reflect the virtue of life- long learning |

**5.16.3 Programme Operational Objectives**

|  |  |
| --- | --- |
|  | B. Tech. Biotechnology program will create conducive environment to make the students adapt to rapidly changing disruptive technologies for excellence in teaching, learning, research and professional development . |
|  | The program will **provide** opportunities to the faculty and staff   to regularly upgrade their knowledge and skills by facilitating their participation in professional development programmes. |
|  | The program will **demonstrate** sensitivity to the diverse needs of students and accordingly develop facilities and services |
|  | The programme will **build** strong relationship with industry and formulate an alumni network while proactively seeking suggestions on curricula and training. |
|  | The programme will **improve** processes and systems with an aim to attain national and international accreditations |
|  | The programme will facilitate employment opportunities and also support students to start their own ventures |
|  | The programme will implement good governance in discharge of responsibilities and execution of policies and programs |
|  | The programme will provide ample opportunities for international exposure to faculty and students |

**5.16.4 Programme Learning Outcomes**

|  |  |  |
| --- | --- | --- |
| **Intended Learning Outcomes** | | |
| 1 |  | The student will develop analytical mindset to find strategic solutions to diverse problems. |
| 2 |  | The student will have decision making capabilities to find apt and sustainable solutions to complex problems. |
| 3 |  | The student will apply modern IT tools for acquisition and analysis of biological data. |
| 4 |  | The student will be able to demonstrate innovative and sustainable approach in order to solve scientific problems. |
| 5 |  | The student will be confident in communication, interpersonal skills and relationship-building. |
| 6 |  | The student will be able to demonstrate team work and conflict resolution strategies through leadership qualities |
| 7 |  | The student will be a responsible global citizen with environment conserving attitude. |
| 8 |  | The student will demonstrate ethically, environmentally and socially aware attitude. |
| 9 |  | The student will develop entrepreneurial skills through innovative and creative decision making. |
| 10 |  | The student will have lifelong learning approach to create new knowledge from existing knowledge. |

**5.16.5** **Programme Operational Outcomes**

|  |  |  |
| --- | --- | --- |
| **Operational Outcomes** | | |
| 1 |  | B. Tech. biotechnology programme will promote the use of appropriate methodology and pedagogical tools for teaching, learning and development |
| 2 |  | The programme will provide environment for innovation and research and academic facilities, technological resources for the intellectual growth of faculty and students |
| 3 |  | The programme will facilitate resources to cater diverse need of the students and faculty to achieve academica excellence. |
| 4 |  | The programme will develop building of strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training. |
| 5 |  | The programme will develop infrastructure and resourcesto attain national and international accreditations |
| 6 |  | The programme will extend support to the students to provide employment , avenues for higher education and start their own ventures |
| 7 |  | The programme will ensure transparency and good governance  by inculcating ethics and values in teaching , theory and research |
| 8 |  | The programme will invite delegates and speakers in conferences and seminars and provide various other opportunities for global exposure |

**5.16.6 Programme Educational Outcome Assessment for B. Tech. Biotechnology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The students shall be able to assemble and develop the knowledge in order to attain the academic excellence and recognize how to solve the problems in the area of bioscience and biotechnology. | The student will develop analytical mindset to find strategic solutions to diverse problems | \*Comprehensive Exam | UG/PLO1/CE Framework | 70% students shall pass the exam. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall demonstrate strategic thinking for analysis and development of solutions through Biotechnological and other related tools. | The student will have decision making capabilities to find apt and sustainable solutions to complex problems | Project report submission  \*Comprehensive exam | UG/PLO2/TP/SI/VV | 100% students will undertake and complete the project report  \*70 % students shall pass the exam | Industry feedback analysis |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| UG/PLO2/CE Framework |
| 3 | The students shall be able to apply the latest tools and technologies to analyze, interpret and solve the biological data | The student will apply modern IT tools for acquisition and analysis of biological data | \*section 3 of Comprehensive Exam | UG/PLO3/CE Framework | 70% students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey.. |
| 4 | The student shall be able to comprehend and interpret the research data to find sustainable solutions for biological problems. | The student will be able to demonstrate innovative and sustainable approach in order to solve scientific problems. | Project report submission | UG/PLO4/ | 100% students shall complete their projects and submit the report | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO4/CE Framework |
| 5 | The students shall be able to develop effective communication skills to enhance interpersonal relationship which will help the students in the placements | The student will be confident in communication, interpersonal skills and relationship-building. | \*Rubrics (Communication skills)  \*Comprehensive exam | UG/PLO5/ BC | 80% students shall achieve a minimum of ”Satisfactory” outcome attainment level  \*70 % students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  |
| UG/PLO5/CE Framework |
| 6 | The student shall be able to demonstrate the leadership qualities and work effectively in a team as well as an individual.  . | The student will be able to demonstrate team work and conflict resolution strategies through leadership qualities | \*Rubrics Behavioural Science  \*Comprehensive exam |  | 80% students shall achieve a minimum of ”Satisfactory” outcome attainment level  \*70 % students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey.. |
| UG/PLO6/BS |
| UG/PLO6/CE Framework |
| 7 | The student should able to execute knowledge and develop global citizenship skills to build a sustainable world community for the betterment of Bioscience and Biotechnology | The student will be a responsible global citizen with environment conserving attitude | \*Rubrics FBL  \*Section 9 of Comprehensive Exam |  | \*80% students shall achieve a minimum of ”Satisfactory” outcome attainment level  \*70 % students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO7/ |
| UG/PLO7/CE Framework |
| 8 | The student shall be able to implement ethical behavior and demonstrate sensitivity towards various social and cultural issues for the betterment of the society. | The student will demonstrate ethically, environmentally and socially aware attitude. | \*Plagiarism Checking  \*Comprehensive Exam |  | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%.  \*70 % students shall pass | Industry feedback Analysis |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
|  |  |  |
| 9 | The student shall be able to develop networking and entrepreneurship skills and create strong network with industry, academia and alumini. | The student will develop entrepreneurial skills through innovative and creative decision making. | \*Section 7 of Comprehensive Exam  Project report submission | UG/PLO9/ | 70% students shall pass the exam  100 % students shall submit the project report | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO9/CE Framework | Alumni Survey | UG/PLO/Alumni Survey | 80% students shall score ≥ 75% in exit survey. |
| 10 | The student shall be able to evaluate and reflect the virtue of life- long learning | The student will have lifelong learning approach to create new knowledge from existing knowledge | \*Section 8 of Comprehensive Exam |  | 70% Students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey.. |
| UG/PLO10/CE Framework |

**5.16.7 Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)**

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

Matrix of PEO’s and PLO’s

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PEO/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** |
| PLO 1 |  |  |  |  |  |  |  |  |  |  |
| PLO 2 |  |  |  |  |  |  |  |  |  |  |
| PLO 3 |  |  |  |  |  |  |  |  |  |  |
| PLO 4 |  |  |  |  |  |  |  |  |  |  |
| PLO 5 |  |  |  |  |  |  |  |  |  |  |
| PLO 6 |  |  |  |  |  |  |  |  |  |  |
| PLO 7 |  |  |  |  |  |  |  |  |  |  |
| PLO 8 |  |  |  |  |  |  |  |  |  |  |
| PLO 9 |  |  |  |  |  |  |  |  |  |  |
| PLO 10 |  |  |  |  |  |  |  |  |  |  |

**5.17 Programme – B. Tech. Bioinformatics**

**5.17.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide applied education in the area of Bioinformatics with emerging technologies like AI and Computational Intelligence in context of its universal implications in Biosciences domain and adhere to the futuristic industry specific needs. To groom students into responsible global citizen with environmentally friendly attitude by making them not only excellent professionals but also good individuals having understanding and regards for human values, pride culture and courage of conviction and action. |

**5.17.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
| **Educational Goals** | |
| 1 | The student shall be able develop conceptual as well as applied knowledge and skills in the field of Bioinformatics and Data Science to attain academic excellence. |
| 2 | The student shall demonstrate strategic thinking for data analysis and development of solutions through Bioinformatics tools and technologies. |
| 3 | The student shall be able to use and apply latest technologies like Machine learning , artificial intelligence algorithms for biological data analysis. |
| 4 | The student shall be able to demonstrate innovative and sustainable approach in order to solve scientific problems. |
| 5 | The student shall be confident in interpersonal skills relationship-building and communication. |
| 6 | The student shall be able to demonstrate team work and conflict resolution through leadership qualities. |
| 7 | The student shall be able to execute their knowledge and technical skills for the conferences, discussions, globalization and environmental conservation. |
| 8 | The student shall be able to practice the ethical principles and understand their social responsibilities. |
| 9 | The student shall be able to develop entrepreneurial orientation through innovative and creative decision making for various projects in Bioinformatics. |
| 10 | The student shall be able to develop lifelong learning approach to create new knowledge from existing knowledge. |

**5.17.3 Programme Operational Objectives**

|  |  |
| --- | --- |
| 1 | B. Tech. Bioinformatics program will create conducive environment to make the student adapt to rapidly changing disruptive technologies for excellence in teaching, learning, research and analytical skills development of students. |
| 2 | The program will **provide** opportunities to the faculty and staff   to regularly upgrade their knowledge and skills by facilitating their participation in professional development programmes. |
| 3 | The program will **demonstrate** sensitivity to the diverse needs of students and accordingly develop facilities and services |
| 4 | The programme will **built** strong relationship with industry and formulate an alumni network while proactively seeking suggestions on curricula and training. |
| 5 | The programme will **improve** processes and systems with an aim to attain national and international accreditations. |
| 6 | The programme will facilitate employment opportunities and also support students to start their own ventures. |
| 7 | The programme will implement good governance in discharge of responsibilities and execution of policies and programs. |
| 8 | The programme will provide ample opportunities for international exposure to faculty and students |

**5.17.4 Programme Learning Outcomes**

|  |  |  |
| --- | --- | --- |
| **Intended Learning Outcomes** | | |
| 1 |  | The student will develop technical mindset to find strategic solutions to diverse problem in bioinformatics. |
| 2 |  | The student will have decision making capabilities to find appropriate and sustainable solutions to complex problems. |
| 3 |  | The student will apply modern latest IT tools and Artificial Intelligence for acquisition and analysis of biological data. |
| 4 |  | The student will be able to demonstrate innovative and sustainable approach in order to solve scientific problems. |
| 5 |  | The student will be confident in communication, interpersonal skills and relationship-building. |
| 6 |  | The student will be able to demonstrate team work and conflict resolution strategies through leadership qualities |
| 7 |  | The student will be a responsible global citizen with environment conserving attitude. |
| 8 |  | The student will demonstrate ethically, environmentally and socially aware attitude. |
| 9 |  | The student will develop entrepreneurial skills. |
| 10 |  | The student will have lifelong learning approach to create new knowledge from existing knowledge. |

**5.17.5** **Programme Operational Outcomes**

|  |  |  |
| --- | --- | --- |
| **Operational Outcomes** | | |
| 1 |  | B. Tech. Bioinformatics programme will promote the use of appropriate methodology and pedagogical tools for teaching, learning and development. |
| 2 |  | The programme will provide environment for innovation and research and academic facilities, technological resources for the intellectual growth of faculty and students. |
| 3 |  | The programme will facilitate resources to cater diverse need of the students and faculty to achieve academica excellence. |
| 4 |  | The programme will develop building of strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training. |
| 5 |  | The programme will develop infrastructure and resourcesto attain national and international accreditations |
| 6 |  | The programme will extend support to the students to provide employment , avenues for higher education and start their own ventures |
| 7 |  | The programme will ensure transparency and good governance  by inculcating ethics and values in teaching , theory and research |
| 8 |  | The programme will invite delegates and speakers in conferences and seminars and provide various other opportunities for global exposure |

**5.17.6 Programme Educational Outcome Assessment for B. Tech. Bioinformatics**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall be able develop conceptual as well as applied knowledge and skills in the field of Bioinformatics and Data Science to attain academic excellence. | The student will develop technical mindset to find strategic solutions to diverse problem in bioinformatics. | \*Comprehensive Exam | UG/PLO1/CE Framework | 70% students shall pass the exam. | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall demonstrate strategic thinking for data analysis and development of solutions through Bioinformatics tools and technologies. | The student will have decision making capabilities to find appropriate and sustainable solutions to complex problems. | Project report submission  \*Comprehensive exam | UG/PLO2/TP/SI/VV | 100% students will undertake and complete the project report  \*70 % students shall pass the exam | Industry feedback analysis |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| UG/PLO2/CE Framework |
| 3 | The student shall be able to use and apply latest technologies like Machine learning , artificial intelligence algorithms for biological data analysis. | The student will apply modern latest IT tools and Artificial Intelligence for acquisition and analysis of biological data. | \*section 3 of Comprehensive Exam | UG/PLO3/CE Framework | 70% students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey.. |
| 4 | The student shall be able to demonstrate innovative and sustainable approach in order to solve scientific problems. | The student will be able to demonstrate innovative and sustainable approach in order to solve scientific problems. | Project report submission | UG/PLO4/ | 100% students shall complete their projects and submit the report | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO4/CE Framework |
| 5 | The student shall be confident in interpersonal skills relationship-building and communication. | The student will be confident in communication, interpersonal skills and relationship-building. | \*Rubrics (Communication skills)  \*Comprehensive exam | UG/PLO5/ BC | 80% students shall achieve a minimum of ”Satisfactory” outcome attainment level  \*70 % students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  |
| UG/PLO5/CE Framework |
| 6 | The student shall be able to demonstrate team work and conflict resolution through leadership qualities. | The student will be able to demonstrate team work and conflict resolution strategies through leadership qualities | \*Rubrics Behavioural Science  \*Comprehensive exam |  | 80% students shall achieve a minimum of ”Satisfactory” outcome attainment level  \*70 % students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey.. |
| UG/PLO6/BS |
| UG/PLO6/CE Framework |
| 7 | The student shall be able to execute their knowledge and technical skills for the conferences, discussions, globalization and environmental conservation. | The student will be a responsible global citizen with environment conserving attitude. | \*Rubrics FBL  \*Section 9 of Comprehensive Exam |  | \*80% students shall achieve a minimum of ”Satisfactory” outcome attainment level  \*70 % students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO7/ |
| UG/PLO7/CE Framework |
| 8 | The student shall be able to practice the ethical principles and understand their social responsibilities. | The student will demonstrate ethically, environmentally and socially aware attitude. | \*Plagiarism Checking  \*Comprehensive Exam |  | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%.  \*70 % students shall pass | Industry feedback Analysis |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
|  |  |  |
| 9 | The student shall be able to develop entrepreneurial orientation through innovative and creative decision making for various projects in Bioinformatics. | The student will develop entrepreneurial skills | \*Section 7 of Comprehensive Exam  Project report submission | UG/PLO9/ | 70% students shall pass the exam  100 % students shall submit the project report | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO9/CE Framework | Alumni Survey | UG/PLO/Alumni Survey | 80% students shall score ≥ 75% in exit survey. |
| 10 | The student shall be able to develop lifelong learning approach to create new knowledge from existing knowledge. | The student will have lifelong learning approach to create new knowledge from existing knowledge. | \*Section 8 of Comprehensive Exam |  | 70% Students shall pass the exam | Student Exit Survey | UG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey.. |
| UG/PLO10/CE Framework |

**5.17.7 Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)**

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

Matrix of PEO’s and PLO’s

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PEO/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** |
| PLO 1 |  |  |  |  |  |  |  |  |  |  |
| PLO 2 |  |  |  |  |  |  |  |  |  |  |
| PLO 3 |  |  |  |  |  |  |  |  |  |  |
| PLO 4 |  |  |  |  |  |  |  |  |  |  |
| PLO 5 |  |  |  |  |  |  |  |  |  |  |
| PLO 6 |  |  |  |  |  |  |  |  |  |  |
| PLO 7 |  |  |  |  |  |  |  |  |  |  |
| PLO 8 |  |  |  |  |  |  |  |  |  |  |
| PLO 9 |  |  |  |  |  |  |  |  |  |  |
| PLO 10 |  |  |  |  |  |  |  |  |  |  |

### **5.18 Programme – B. Sc. + M. Sc. (Dual) Biotechnology**

## **5.18.1 Mission Statement**

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| --- |
| **Programme Mission** |
| To impart state of the art enhanced learning and education in both basic and applied areas of Biotechnology inculcating universal and futuristic connotation structuring knowledge innovation through creative technologies for global learning outcomes. The meticulous harbouring of fundamental as well as highly advanced specialisation courses enthuse in depth training while cultivating holistic development in virtue of human values with pride in their heritage and culture, inculcating sensibility as well courage of conviction and action with continued yearning towards perfection. Program mission is to assimilate and articulate professional dexterity in biology for systemizing industrial, research or entrepreneurship endeavours. |

## **5.18.2 - Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
|  | |
| 1. | The students shall be able to develop critical and practical understanding in the field of biotechnology, bioinformatics, medical, industrial, environmental and agricultural biotechnology to attain academic eminence. |
| 2. | The students shall be able to symbolize strategic research planning to solve a range of complex scientific problems, design experiments, interpretation and analysis of data, towards constructing significant results. |
| 3. | The students shall be able to use and apply theoretical knowledge and appropriate modern IT tools in solving problems related to research and development. |
| 4. | The students shall be able to interpret and comprehend specialized cognitive and creative skills to identity, review, systematically analyze and critically appraise innovatory concepts of biotechnology for sustainable solutions. |
| 5. | The students shall be able to augur good communication skills and inter-personal relationships to effectively disseminate research and technical information. |
| 6. | The students shall be able to express effectively as an individual, leader and as team member in multidisciplinary settings. |
| 7. | The students shall be able to operate intercultural competence and global citizenship by interpreting sustainable aspects of biotechnology knowledge and technical skills with nuance and accuracy. |
| 8. | The students shall be able to practice principles of ethics within the framework and apply these principles for environmentally, technically and socially sensitive issues with acceptance in the society. |
| 9. | The students shall be able to evolve taught concepts and understanding of management principles and entrepreneurship for creative and innovative decision abilities. |
| 10. | The students shall be able to enroot and reflect habit to acquire knowledge and skills to become lifelong learners and create new knowledge, processes or products. |

**5.18.3 Programme Operational Objectives**

|  |
| --- |
| The B. Sc. +M.Sc. (Biotechnology) programme will aim to achieve the University’s goal of achieving academic excellence by creating and providing valuable resources to students. |
| The programme will provide an academically conducive environment for holistic development of students and encourage them to obtain funded research projects from various agencies |
| The program will demonstrate support to the students by providing resources to communicate their scientific ideas and research work in highly reputed indexed journals. |
| The programme will build strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training and employment |
| The programme will improve processes and systems by encouraging students to provide constructive inputs for execution of policies and programs towards achieving good governance |
| The programme will extend support to the students in order to facilitate employment opportunities and also support students to develop entrepreneurial skills. |
| The programme will inculcate core values of the university and ethical conduct amongst students, faculty and staff. |
| The programme will create opportunities for international exposure for its students. |

**5.18.4 Programme Learning Outcomes**

|  |  |
| --- | --- |
| **Intended Learning Outcomes** | |
| 1. | The student will establish academic excellence and practical understanding in the field of biotechnology, bioinformatics, medical, industrial, environmental and agricultural biotechnology to strategise solutions to diverse problems. |
| 2. | The student will be able to have proficiency and decision abilities for solving a range of complex scientific problems, design experiments, interpretation and analysis of data, towards constructing significant results and sustainable solutions. |
| 3. | The student will have practical skills and theoretical knowledge and application of appropriate modern IT tools in solving problems related to biological data research and development. |
| 4. | The student will be able to translate specialized cognitive and creative skills to identity, review, systematically analyze and critically appraise specialized concepts of biotechnology for sustainable and innovative problem solving. |
| 5. | The student will have a conviction for inter-personal communication skills and relationship building to effectively disseminate research and technical information. |
| 6. | The student will be able to work effectively as an individual, and as team member or leader in diverse teams, and in multidisciplinary settings for conflict resolution. |
| 7. | The student will be able to authorirate interconnectedness and interdependency of different countries and populations for becoming a global citizen with environment preservation demeanour. |
| 8. | The student will be able to translate principles of ethics within the framework and apply these principles for environmentally, technically and socially sensitive issues with acceptance in the society. |
| 9 . | The student will demonstrate knowledge and understanding of technical and management principles in order to achieve self as well as organizational goals through innovative learning and creative decision processing. |
| 10. | The student will evince lifelong learning for improving knowledge, skills and competences throughout life for designing newer sustainable technologies. |

**5.18.5 Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Outcomes** | |
| 1 | BSc.+ MSc. Biotechnology programme will create appropriate resources, infrastructure, and develop appropriate methodology and pedagogical tools for excellence in teaching, learning and development of students. |
| 2 | The programme will provide opportunities to the faculty and staff   to regularly upgrade their knowledge and skills by facilitating their participation in professional development programmes. |
| 3 | The programme shall provide academic facilities, technological resources for teaching and learning to the students |
| 4 | The student of the programme will earn achievements in intra and inter-university Extra Curricular activities. |
| 5 | Faculty and students will be engaged in scholarly and professional activities in order to enhance their competencies and to contribute to the existing body of Knowledge. |
| 6 | The programme will integrate ethics and values in teaching, theory and practice, develop and retain excellent students, faculty and staff. |
| 7 | The programme will facilitate cultivation of cultural and environmental conservation values among students. |
| 8 | The programme will develop and maintain strong relationship with research institutes, alumni and industry. |
| 9 | The programme will invite international delegates and speakers for seminars and conferences and various other opportunities for global exposure and will support all the students for quality placements or join family business or start their own venture |
| 10 | The programme will establish an internal quality cell for operational quality and process improvement for students. |

**5.18.6 Programme Educational Outcome Assessment for B.Sc.+M.Sc. (Dual) Biotechnology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The students shall be able to develop critical and practical understanding in the field of biotechnology, bioinformatics, medical, industrial, environmental and agricultural biotechnology to attain academic eminence. | The student will establish academic excellence and practical understanding in the field of biotechnology, bioinformatics, medical, industrial, environmental and agricultural biotechnology to strategise solutions to diverse problems. | \*Comprehensive Exam | PG/PLO1/CE Framework | 70% students shall pass the exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in the Exit Survey. |
| 2 | The students shall be able to symbolize strategic research planning to solve a range of complex scientific problems, design experiments, interpretation and analysis of data, towards constructing significant results. | The student will be able to have proficiency and decision abilities for solving a range of complex scientific problems, design experiments, interpretation and analysis of data, towards constructing significant results and sustainable solutions. | Project report submission | PG/PLO2/Dissertation | 100% students will undertake and complete the project report | Internship feedback analysis |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| PG/PLO2/CE Framework |
| 3 | The students shall be able to use and apply theoretical knowledge and appropriate modern IT tools in solving problems related to research and development. | The student will have practical skills and theoretical knowledge and application of appropriate modern IT tools in solving problems related to biological data research and development. | \*Section 3 of Comprehensive Exam | PG/PLO3/CE Framework | 70 % students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in the Exit Survey. |
| 4 | The students shall be able to interpret and comprehend specialized cognitive and creative skills to identity, review, systematically analyze and critically appraise innovatory concepts of biotechnology for sustainable solutions. | The student will be able to translate specialized cognitive and creative skills to identity, review, systematically analyze and critically appraise specialized concepts of biotechnology for sustainable and innovative problem solving. |  | PG/PLO4/ | 100% students shall complete their projects and submit the report | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in the Exit Survey. |
| \*Project report submission | PG/PLO4/CE Framework |
| 5 | The students shall be able to augur good communication skills and inter-personal relationships to effectively disseminate research and technical information. | The student will have a conviction for inter-personal communication skills and relationship building to effectively disseminate research and technical information. | \*Rubrics Communication skills |  | 80% students shall achieve a minimum of “Satisfactory” outcome attainment level. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in the Exit Survey. |
| PG/PLO5/ BC |
|  |  |
| 6 | The students shall be able to express effectively as an individual, leader and as team member in multidisciplinary settings. | The student will be able to work effectively as an individual, and as team member or leader in diverse teams, and in multidisciplinary settings for conflict resolution. | \*Rubrics Behavioural Science |  | 80% students shall achieve a minimum of “Satisfactory” outcome attainment level. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in the Exit Survey. |
| PG/PLO6/BS |
| PG/PLO6/CE Framework |
| 7 | The students shall be able to operate intercultural competence and global citizenship by interpreting sustainable aspects of biotechnology knowledge and technical skills with nuance and accuracy. | The student will be able to authorirate interconnectedness and interdependency of different countries and populations for becoming a global citizen with environment preservation demeanour. | \*Rubrics FBL |  | 80% students shall achieve a minimum of “Satisfactory” outcome attainment level. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in the Exit Survey. |
| PG/PLO7/ |
| UG/PLO7/CE Framework |
| 8 | The students shall be able to practice principles of ethics within the framework and apply these principles for environmentally, technically and socially sensitive issues with acceptance in the society. | The student will be able to translate principles of ethics within the framework and apply these principles for environmentally, technically and socially sensitive issues with acceptance in the society. | \*Plagiarism Checking of project report |  | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Faculty internship feedback |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| PG/PLO8/CE Framework |  |  |  |
| 9 | The students shall be able to evolve taught concepts and understanding of management principles and entrepreneurship for creative and innovative decision abilities. | The student will demonstrate knowledge and understanding of technical and management principles in order to achieve self as well as organizational goals through innovative learning and creative decision processing. | Section 7 of Comprehensive exam  Project report submission | PG/PLO9/ | 70% students shall pass the exam  100% students shall submit the project report | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in the Exit Survey. |
|  | PG/PLO9/CE Framework | Alumni Survey | PG/PLO/Alumni Survey |
| 10 | The students shall be able to enroot and reflect habit to acquire knowledge and skills to become lifelong learners and create new knowledge, processes or products. | The student will evince lifelong learning for improving knowledge, skills and competences throughout life for designing newer sustainable technologies. | \*Section 8 of Comprehensive Exam | PG/PLO10/CE Framework | 70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in the Exit Survey. |

**5.18.7 Matrix Of PEO`s and PLO`s**

## Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** |
| PLO 1 |  |  |  |  |  |  |  |  |  |  |
| PLO 2 |  |  |  |  |  |  |  |  |  |  |
| PLO 3 |  |  |  |  |  |  |  |  |  |  |
| PLO 4 |  |  |  |  |  |  |  |  |  |  |
| PLO 5 |  |  |  |  |  |  |  |  |  |  |
| PLO 6 |  |  |  |  |  |  |  |  |  |  |
| PLO 7 |  |  |  |  |  |  |  |  |  |  |
| PLO 8 |  |  |  |  |  |  |  |  |  |  |
| PLO 9 |  |  |  |  |  |  |  |  |  |  |
| PLO 10 |  |  |  |  |  |  |  |  |  |  |

**5.19 Programme- B. Tech +M. Tech. (Biotechnology)**

**5.19.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide advance and applied education in the area of Biosciences and Biotechnology, to prepare globally accepted, industry ready, smart students equipped with disruptive technologies along with core subjects and specialized topics in the emerging technology fronts. The program is structured to meet the demand for engineers skilled in multidisciplinary aspects combined with traditional engineering studies and Industry 4.0. Students are groomed to develop the overall personality by making them not only excellent professionals but also excellent human beings enriched with cultural values along with attributes of courage, conviction and action. |

**5.19.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
|  | |
|  | The student shall be able to develop conceptual as well as applied knowledge and skills relevant in the evolving era of disruptive technologies in the field of Biotechnology to attain academic excellence. |
|  | The student shall demonstrate strategic thinking for problem analysis and development of solutions through Biotechnological knowledge and beyond. |
|  | The student shall be able to use and apply latest IT tools to analyze biological and technical data using latest statistical tools. |
|  | The student shall be able to demonstrate innovative and sustainable approach in order to solve scientific problems. |
|  | The student shall be confident in interpersonal skills relationship-building and communication. |
|  | The student shall be able to demonstrate team work and conflict resolution through leadership qualities. |
|  | The student shall be able to execute their knowledge and technical skills for the betterment of society at national and global level by providing sustainable solutions. |
|  | The student shall be able to practice the ethical principles and understand their social responsibilities. |
|  | The student shall be able to develop entrepreneurial orientation through innovative and creative decision making. |
|  | The student shall be able to develop lifelong learning approach to create new knowledge from existing knowledge. |

**5.19.3 Programme Operational Objectives**

|  |
| --- |
| **Programme Name – B. Tech.+ M. Tech. (Biotechnology )** |
| **Programme Operational Objectives** |
| B.Tech. + M. Tech. Biotechnology programme will create appropriate resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students to make them adapt to the rapidly changing disruptive technologies in the field of Biotechnology. |
| The programme will **provide** opportunities and environment for innovation and research excellence for the intellectual growth of faculty and students. |
| The programme will **demonstrate** sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| The programme will continuously strive to **build** strong industry interaction, alumni networks and empanelment of expertise from industry while proactively seeking suggestions on curricula and training. |
| The programme will continually **improve** processes and systems with an aim to attain national and international accreditations. |
| The programme will **extend** support to the students in order to facilitate campus recruitment, higher education or starting their own ventures. |
| The programme will **act** ethically to ensure transparency and good governance while discharging various responsibilities to its stakeholders and execution of policies and programs. |
| The programme will **create** opportunities for international exposure for its students and faculty. |

**5.19.4 Programme Learning Outcomes**

|  |  |
| --- | --- |
| **Intended Learning Outcomes** | |
|  | The student will develop analytical mindset to find strategic solutions to diverse problems. |
|  | The student will have decision making capabilities to find apt and sustainable solutions to complex problems. |
|  | The student will apply modern IT tools for acquisition and analysis of biological data. |
|  | The student will be able to demonstrate innovative and sustainable approach in order to solve scientific problems. |
|  | The student will be confident in communication, interpersonal skills and relationship-building. |
|  | The student will be able to demonstrate team work and conflict resolution strategies through leadership qualities. |
|  | The student will be a responsible global citizen with environment conserving attitude. |
|  | The student will demonstrate ethically, environmentally and socially aware attitude. |
|  | The student will develop entrepreneurial skills through innovative and creative decision making. |
|  | The student will have lifelong learning approach to create new knowledge from existing knowledge. |

**5.19.5 Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Outcomes** | |
|  | B. Tech. + M. Tech. Biotechnology programme will promote use of appropriate methodology and pedagogical tools for teaching, learning and development. |
|  | The curriculum of the programme will be contemporary and relevant to meet research and industry requirements and benchmarked on global standards by incorporating feedback from all the stakeholders. |
|  | The programme shall provide academic facilities, technological resources for teaching and learning to the students |
|  | The student of the programme will earn achievements in intra and inter-university Extra Curricular activities. |
|  | Faculty and students will be engaged in scholarly and professional activities in order to enhance their competencies and to contribute to the existing body of Knowledge. |
|  | The programme will integrate ethics and values in teaching, theory and practice, develop and retain excellent students, faculty and staff. |
|  | The programme will facilitate cultivation of cultural and environmental conservation values among students. |
|  | The programme shall develop and maintain strong relationship with research institutes, alumni and industry. |
|  | The programme shall invite international delegates and speakers for seminars and conferences and various other opportunities for global exposure and will support all the students for quality placements or join family business or start their own venture |
|  | The programme shall establish an internal quality cell for operational quality and process improvement for students. |

**5.19.6 Programme Educational Outcome Assessment for B. Tech. + M. Tech. Biotechnology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No. for Direct Assessment** | **Target** | **Indirect** | **Tool No. for Indirect Assessment** | **Target** |
| 1 | The student shall be able develop conceptual as well as applied knowledge and skills in the field of Biotechnology to attain academic excellence. | The student will develop analytical mindset to find strategic solutions to diverse problems. | \*Comprehensive Exam | PG/PLO1/CE Framework | 70% students shall pass the exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall demonstrate strategic thinking for Problem Analysis and development of Solutions through Biotechnological knowledge. | The student will develop analytical mindset to find strategic solutions to diverse problems. | Project Report submission | PG/PLO2/Dissertation | 100% students will undertake and complete the Project Report  \* 70% students shall pass the comprehensive exam. | Feedback analysis of internship guide |  | The Industry Internship Guide rates the students between 3-5 ranges on the Likert Scale in the feedback. |
| \*Comprehensive Exam | PG/PLO2/CE Framework |
| 3 | The student shall be able to use and apply latest IT tools to analyze, biological, statistical and technical big data. | The student will apply modern IT tools for acquisition and analysis of biological data. | \*Section 3 of Comprehensive Exam | PG/PLO3/CE Framework | 70% students shall pass the comprehensive exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to demonstrate innovative and sustainable approach in order to solve scientific problems. | The student will be able to demonstrate innovative and sustainable approach in order to solve scientific problems. | Project Report submission | PG/PLO4/CE Framework | 100%students shall complete their project and submit the report. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 5 | The student shall be confident in interpersonal skills relationship-building and communication. | The student will be confident in communication, interpersonal skills and relationship-building. |  |  | 80% students shall achieve a minimum of ‘satisfactory’ outcome attainment level  \* 70% students shall pass the comprehensive exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Rubrics Communication skills | PG/PLO5/ BC |
| \*Comprehensive Exam | PG/PLO5/CE Framework |
| 6 | The student shall be able to demonstrate Team work and Conflict resolution through leadership qualities. | The student will be able to demonstrate team work and conflict resolution strategies through leadership qualities |  |  | 80% students shall achieve a minimum of ‘satisfactory’ outcome attainment level  \* 70% students shall pass the comprehensive exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Rubrics Behavioural Science | PG/PLO6/BS |
| \*Comprehensive Exam | PG/PLO6/CE Framework |
| 7 | The student shall be able to execute their knowledge and technical skills for the globalization and environmental conservation. | The student will be a responsible global citizen with environment conserving attitude. | \* Rubrics Foreign language  \*Section 9 of Comprehensive Exam |  | \* 80% students shall achieve a minimum of ‘satisfactory’ outcome attainment level.  \* 70% students shall pass the comprehensive exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO7/CE Framework |
| 8 | The student shall be able to practice the ethical principles and understand their social responsibilities. | The student will demonstrate ethically, environmentally and socially aware attitude. | \*Plagiarism Checking of Dissertation  \*Comprehensive Exam |  | \* 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%.  \*70% students shall pass the comprehensive exam. | Feedback industry internship guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \*Comprehensive Exam | PG/PLO8/CE Framework |  |  |  |
| 9 | The student shall be able to develop entrepreneurial orientation through innovative and creative decision making. | The student will develop entrepreneurial skills  through innovative and creative decision making. | Section 7 of comprehensive exam. | PG/PLO9/ | 70% students shall pass the exam.  100% students shall submit the project report | Student Exit Survey | PG/PLO/  Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| Project Report submission | PG/PLO9/CE Framework | Alumni Survey | PG/PLO/  Alumni Survey | 80% students shall score ≥ 75% in exit survey. |
| 10 | The student shall be able to develop lifelong learning approach to create new knowledge from existing knowledge. | The student will have lifelong learning approach to create new knowledge from existing knowledge. |  |  | 70% students shall pass the exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Section 8 of Comprehensive Exam | PG/PLO10/CE Framework |

## **5.19.7 Matrix Of PEO`s and PLO`s**

## Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PEO/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** |
| PLO 1 |  |  |  |  |  |  |  |  |  |  |
| PLO 2 |  |  |  |  |  |  |  |  |  |  |
| PLO 3 |  |  |  |  |  |  |  |  |  |  |
| PLO 4 |  |  |  |  |  |  |  |  |  |  |
| PLO 5 |  |  |  |  |  |  |  |  |  |  |
| PLO 6 |  |  |  |  |  |  |  |  |  |  |
| PLO 7 |  |  |  |  |  |  |  |  |  |  |
| PLO 8 |  |  |  |  |  |  |  |  |  |  |
| PLO 9 |  |  |  |  |  |  |  |  |  |  |
| PLO 10 |  |  |  |  |  |  |  |  |  |  |

**5.20 Programme- M. Sc. Biotechnology**

**5.20.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide advanced education in the area of Biotechnology and emerging frontier areas of knowledge, learning and research to become futuristic and industry ready and to develop the wholesome personality of students by making them excellent professionals with technologically sound and interdisciplinary knowledge, also global citizens having regards for human values, pride in their heritage and culture, a sense of right and wrong, yearning for perfection and courage of conviction and action. |

**5.20.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
|  | |
| 1 | The student shall be able to acquire theoretical and applied knowledge along with skills in the field of Biotechnology to attain academic excellence. |
| 2 | The student shall demonstrate strategic planning to develop research skills and solutions through Biotechnological knowledge to benefit the society. |
| 3 | The student shall be able to use and apply latest IT tools to analyze biological, statistical and technical big data. |
| 4 | The student shall be able to exhibit innovative and rational approach to interpret scientific data to solve technical, conceptual and abstract scientific problems |
| 5 | The student shall be able to develop confidence in research presentations and scientific writing with effective communication skills. |
| 6 | The student shall be able to demonstrate responsibility as an individual along with team members for development of leadership qualities. |
| 7 | The student shall be able to utilize knowledge and technical skills for the development of global citizen skills with a vision of sustainable preservation of the environment. |
| 8 | The student shall be able to practice the ethical principles and understand their social responsibilities. |
| 9 | The student shall be able to develop entrepreneurial and networking skills to establish links with industry and academia through creative thinking. |
| 10 | The student shall be able to develop lifelong learning approach to create new knowledge |

**5.20.3 Programme Operational Objectives**

|  |
| --- |
| **Programme Name – M. Sc. (Biotechnology)** |
| **Programme Operational Objectives** |
| M.Sc. Biotechnology programme will create appropriate resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students to make them adapt to the rapidly changing disruptive technologies in the field of Biotechnology. |
| The programme will provide opportunities and environment for innovation and research excellence for the intellectual growth of faculty and students. |
| The programme will demonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| The programme will continuously strive to build strong industry interaction, alumni networks and empanelment of expertise from industry while proactively seeking suggestions on curricula and training. |
| The programme will continually improve processes and systems with an aim to attain national and international accreditations. |
| The programme will extend support to the students in order to facilitate campus recruitment, higher education or starting their own ventures. |
| The programme will act ethically to ensure transparency and good governance while discharging various responsibilities to its stakeholders and execution of policies and programs. |
| The programme will create opportunities for international exposure for its students and faculty. |

**5.20.4 Programme Learning Outcomes**

|  |  |  |  |
| --- | --- | --- | --- |
| **Intended Learning Outcomes** | | | |
| 1 |  | | The student will develop critical and analytical mindset to find strategic solutions to diverse problems in the field of Biotechnology. |
| 2 |  | | The student will develop capabilities to identify key research issues and formulate strategic and sustainable solutions to complex problems. |
| 3 |  | | The student will apply latest IT tools for acquisition and analysis of biological data. |
| 4 |  | | The student will use research-based knowledge and scientifically validated techniques to analyze and apply to provide valid conclusions |
| 5 | |  | The student will be confident in communication, interpersonal skills, relationship-building, and effective dissemination of research and technical output |
| 6 | |  | The student will be able to develop the desired leadership qualities and will demonstrate responsible attitude as an individual along with team members. |
| 7 | |  | The student will demonstrate a vision for sustainable utilization of resources by utilizing the knowledge and technical skills. |
| 8 | |  | The student will demonstrate ethically, environmentally and socially aware attitude. |
| 9 | |  | The student will develop and utilise creative thinking and entrepreneurial and networking skills to establish meaningful links with industry and academia. |
| 10 | |  | The student will be learn and develop lifelong learning skills that would lead to creation new knowledge which can impact the society. |

**5.20.5 Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Outcomes** | |
| 1. | M.Sc. Biotechnology programme will promote use of appropriate methodology and pedagogical tools for teaching, learning and development. |
| 2. | The programme will provide environment for innovation and research and academic facilities, technological resources for teaching and learning to the students. |
| 3. | The programme will facilitate resources to cater diverse needs of the students and faculty to achieve academic excellence. |
| 4. | The programme will develop and maintain strong relationship with research institutes, alumni and industry. |
| 5. | The programme will develop infrastructure and resources to attain national and international accreditations. |
| 6. | The programme will extend support to the students to provide employment, avenues for higher education and starting their own ventures. |
| 7. | The programme will ensure transparency and good governance by integrating ethics and values in teaching, theory and practice. |
| 8. | The programme will invite international delegates and speakers for seminars and conferences and provide various other opportunities for global exposure. |

**5.20.6 Programme Educational Outcome Assessment for M.Sc. Biotechnology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall be able to acquire theoretical and applied knowledge along with skills in the field of Biotechnology to attain academic excellence. | The student will develop critical and analytical mindset to find strategic solutions to diverse problems in the field of Biotechnology. | \*Comprehensive Exam | PG/PLO1/CE Framework | 70% students shall pass the exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall demonstrate strategic planning to develop research skills and solutions through Biotechnological knowledge to benefit the society | The student will develop capabilities to identify key research issues and formulate strategic and sustainable solutions to complex problems. | Project report submission | PG/PLO2/Dissertation | 100% students will undertake and complete the Project report  \*70% students shall pass the exam | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| Comprehensive Exam | PG/PLO2/CE Framework |
| 3 | . The student shall be able to use and apply latest IT tools to analyze biological, statistical and technical biological data. | The student will apply latest IT tools for acquisition and analysis of biological data. | \*Section 3 of Comprehensive Exam | PG/PLO3/CE Framework | 70% students shall pass the comprehensive exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to exhibit innovative and rational approach to interpret scientific data to solve technical, conceptual and abstract scientific problems | The student will use research-based knowledge and scientifically validated techniques to analyze and apply to provide valid conclusions | Project report submission | PG/PLO4/ | 100% students shall complete their projects and submit the report | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| PG/PLO4/CE Framework |
| 5 | The student shall be able to develop confidence in research presentations and scientific writing with effective communication skills. | The student will be confident in communication, interpersonal skills, relationship-building, and effective dissemination of research and technical output | \*Rubrics Communication skills |  | 80% students shall achieve the minimum of “satisfactory” outcome attainment level  \*70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| PG/PLO5/ BC |
| PG/PLO5/CE Framework |
| 6 | The student shall be able to demonstrate responsibility as an individual along with team members for development of leadership qualities. | The student will be able to demonstrate responsibility as an individual along with team members for development of leadership qualities | \*Behavioural Science rubrics |  | 80% students shall achieve the minimum of “satisfactory” outcome attainment level  \*70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | PG/PLO6/BS |
| \* Comprehensive Exam | PG/PLO6/CE Framework |
| 7 | The student shall be able to utilize knowledge and technical skills for the development of global citizen skills with a vision of sustainable preservation of the environment. | The student will be able to utilize knowledge and technical skills for the development of global citizen skills with a vision of sustainable preservation of the environment. | \* Rubrics FBL  \*Section 9 of Comprehensive Exam | PG/PLO7/CE Framework | 80% students shall achieve the minimum of “satisfactory” outcome attainment level  \*70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 8 | The student shall be able to practice the ethical principles and understand their social responsibilities. | The student will demonstrate ethically, environmentally and socially aware attitude. | \*Plagiarism Checking of project report  \*Comprehensive Exam | PG/PLO8/CE Framework | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%.  \*70% students shall pass the exam | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback.  \*80% students shall score ≥ 75% in exit survey. |
| 9 | The student shall be able to develop entrepreneurial and networking skills to establish links with industry and academia through creative thinking. | The student will be able to develop entrepreneurial and networking skills to establish links with industry and academia through creative thinking. | Section 7 of comprehensive exam  Project report submission | PG/PLO9/ | 70% students shall pass the exam  100% students shall submit the project reports | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 10 | The student shall be able to develop lifelong learning approach to create new knowledge | The student will be able to develop lifelong learning approach to create new knowledge | \*Section 8 of Comprehensive Exam | PG/PLO10/CE Framework | 70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |

**5.20.7 Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)**

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |
| --- |
|  |
| **Matrix Of PEO`s and PLO`s** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **PEO/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** | **PEO 11** | **PEO 12** | | PLO 1 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 2 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 3 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 4 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 5 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 6 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 7 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 8 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 9 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 10 |  |  |  |  |  |  |  |  |  |  |  |  | |

**5. 21 Programme- M. Sc. Bioinformatics**

**5.21.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide applied education in the area of Bioinformatics and extend enquiry beyond Biosciences domain with an approach of competency based learning to adhere to the futuristic industry specific needs and to develop students into a global citizen with environmentally friendly attitude by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong, yearning for perfection and courage of conviction and action. |

**5.21.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
|  | |
| 1 | The student shall develop conceptual as well as applied knowledge and skills in the field of Bioinformatics, AI, neural networks and Data Science. |
| 2 | The student shall demonstrate strategic thinking for data analysis and development of solutions through Bioinformatics tools and techniques. |
| 3 | The student shall be able to use and apply latest technologies and tools to analyze and interpret complex biological problems through Machine learning algorithms and big data analytics. |
| 4 | The student shall be able to demonstrate innovative and sustainable approach in order to solve statistical problems and research projects. |
| 5 | The student shall be confident in interpersonal skills relationship-building and communication for industry and alumni. |
| 6 | The student shall be able to demonstrate team work and conflict resolution through leadership qualities. |
| 7 | The student shall be able to execute their knowledge and technical skills for the conferences, panel discussions, globalization and environmental conservation |
| 8 | The student shall be able to practice the ethical principles, IPR and understand their social responsibilities. |
| 9 | The student shall be able to develop innovative and creative decision making for various projects at national and international level in Bioinformatics. |
| 10 | The student shall be able to good managerial skills to enhance employment and entrepreneurship opportunities and able to create the virtue of lifelong learning. |

**5.21.3 Programme Operational Objectives**

|  |
| --- |
| **Programme Name – M. Sc. (Bioinformatics)** |
| **Programme Operational Objectives** |
| MSc. Bioinformatics programme will create appropriate resources for AI and Data Science, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students. |
| The programme will provide opportunities and environment for innovation and research excellence for the intellectual growth of faculty and students. |
| The programme will demonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| The programme will continuously strive to build strong industry interaction, alumni networks and empanelment of expertise from industry while proactively seeking suggestions on curricula and training. |
| The programme will continually improve processes and systems with an aim to attain national and international accreditations. |
| The programme will extend support to the students in order to facilitate campus recruitment, higher education or starting their own ventures. |
| The programme will act ethically to ensure transparency and good governance while discharging various responsibilities to its stakeholders and execution of policies and programs. |
| The programme will create opportunities for international exposure for its students and faculty. |

**5.21.4 Programme Learning Outcomes**

|  |  |  |  |
| --- | --- | --- | --- |
| **Intended Learning Outcomes** | | | |
| 1 |  | | The student will develop technical mindset to find strategic solutions to diverse problem in bioinformatics data analytics. |
| 2 |  | | The student will have decision making capabilities to find apt and sustainable solutions to complex biological problem. |
| 3 |  | | The student will apply modern IT tools and Artificial Intelligence for acquisition and analysis of biological data. |
| 4 |  | | The student will be able to demonstrate innovative and sustainable approach in order to solve statistical problems and research projects. |
| 5 | |  | The student will be confident in communication, interpersonal skills and relationship-building. |
| 6 | |  | The student will be able to demonstrate team work and conflict resolution strategies through leadership qualities |
| 7 | |  | The student will be a responsible global citizen with environment conserving attitude. |
| 8 | |  | The student will demonstrate ethically, environmentally and socially aware attitude. |
| 9 | |  | The student will principles of project management to manage one’s own work and/or project work as a member or a leader in a team, by work experience gathered through short term training / dissertation projects with proper statistical representation. |
| 10 | |  | The student will have lifelong learning approach to create new knowledge from existing knowledge. |

**5.21. 5 Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Outcomes** | |
| 1. | M.Sc. Bioinformatics programme will promote use of appropriate methodology and pedagogical tools for teaching, learning and development. |
| 2. | The programme will provide environment for innovation and research and academic facilities, technological resources for teaching and learning to the students. |
| 3. | The programme will facilitate resources to cater diverse needs of the students and faculty to achieve academic excellence. |
| 4. | The programme will develop and maintain strong relationship with research institutes, alumni and industry. |
| 5. | The programme will develop infrastructure and resources to attain national and international accreditations. |
| 6. | The programme will extend support to the students to provide employment, avenues for higher education and starting their own ventures. |
| 7. | The programme will ensure transparency and good governance by integrating ethics and values in teaching, theory and practice. |
| 8. | The programme will invite international delegates and speakers for seminars and conferences and provide various other opportunities for global exposure. |

**5.21.6 Programme Educational Outcome Assessment for M.Sc. Bioinformatics**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall develop conceptual as well as applied knowledge and skills in the field of Bioinformatics, AI, neural networks and Data Science. | The student will develop technical mindset to find strategic solutions to diverse problem in bioinformatics data analytics. | \*Comprehensive Exam | PG/PLO1/CE Framework | 70% students shall pass the exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall demonstrate strategic thinking for data analysis and development of solutions through Bioinformatics tools and techniques. | The student will have decision making capabilities to find apt and sustainable solutions to complex biological problem. | Project report submission | PG/PLO2/Dissertation | 100% students will undertake and complete the Project report  \*70% students shall pass the exam | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| Comprehensive Exam | PG/PLO2/CE Framework |
| 3 | The student shall be able to use and apply latest technologies and tools to analyze and interpret complex biological problems through Machine learning algorithms and big data analytics. | The student will apply modern IT tools and Artificial Intelligence for acquisition and analysis of biological data. | \*Section 3 of Comprehensive Exam | PG/PLO3/CE Framework | 70% students shall pass the comprehensive exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to demonstrate innovative and sustainable approach in order to solve statistical problems and research projects. | The student will be able to demonstrate innovative and sustainable approach in order to solve statistical problems and research projects. | Project report submission | PG/PLO4/ | 100% students shall complete their projects and submit the report | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| PG/PLO4/CE Framework |
| 5 | The student shall be confident in interpersonal skills relationship-building and communication for industry and alumni. | The student will be confident in communication, interpersonal skills and relationship-building. | \*Rubrics Communication skills |  | 80% students shall achieve the minimum of “satisfactory” outcome attainment level  \*70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| PG/PLO5/ BC |
| PG/PLO5/CE Framework |
| 6 | The student shall be able to demonstrate team work and conflict resolution through leadership qualities. | The student will be able to demonstrate team work and conflict resolution strategies through leadership qualities | \*Behavioural Science rubrics |  | 80% students shall achieve the minimum of “satisfactory” outcome attainment level  \*70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | PG/PLO6/BS |
| \* Comprehensive Exam | PG/PLO6/CE Framework |
| 7 | The student shall be able to execute their knowledge and technical skills for the conferences, panel discussions, globalization and environmental conservation | The student will be a responsible global citizen with environment conserving attitude. | \* Rubrics FBL  \*Section 9 of Comprehensive Exam | PG/PLO7/CE Framework | 80% students shall achieve the minimum of “satisfactory” outcome attainment level  \*70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 8 | The student shall be able to practice the ethical principles, IPR and understand their social responsibilities. | The student will demonstrate ethically, environmentally and socially aware attitude. | \*Plagiarism Checking of project report  \*Comprehensive Exam | PG/PLO8/CE Framework | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%.  \*70% students shall pass the exam | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback.  \*80% students shall score ≥ 75% in exit survey. |
| 9 | The student shall be able to develop innovative and creative decision making for various projects at national and international level in Bioinformatics. | The student will principles of project management to manage one’s own work and/or project work as a member or a leader in a team, by work experience gathered through short term training / dissertation projects with proper statistical representation. | Section 7 of comprehensive exam  Project report submission | PG/PLO9/ | 70% students shall pass the exam  100% students shall submit the project reports | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 10 | The student shall be able to good managerial skills to enhance employment and entrepreneurship opportunities and able to create the virtue of lifelong learning. | The student will have lifelong learning approach to create new knowledge from existing knowledge. | \*Section 8 of Comprehensive Exam | PG/PLO10/CE Framework | 70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |

**5.21.7 Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)**

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |
| --- |
|  |
| **Matrix Of PEO`s and PLO`s** |
| |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **PEO/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** | | PLO 1 |  |  |  |  |  |  |  |  |  |  | | PLO 2 |  |  |  |  |  |  |  |  |  |  | | PLO 3 |  |  |  |  |  |  |  |  |  |  | | PLO 4 |  |  |  |  |  |  |  |  |  |  | | PLO 5 |  |  |  |  |  |  |  |  |  |  | | PLO 6 |  |  |  |  |  |  |  |  |  |  | | PLO 7 |  |  |  |  |  |  |  |  |  |  | | PLO 8 |  |  |  |  |  |  |  |  |  |  | | PLO 9 |  |  |  |  |  |  |  |  |  |  | | PLO 10 |  |  |  |  |  |  |  |  |  |  | |

**5.22 Programme - M. Tech. Biotechnology**

**5.22.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide applied education in the area of Biosciences and Biotechnology in context of its universal implications and extend enquiry beyond Biosciences domain with an approach of competency based learning to adhere to the futuristic industry specific needs and to develop students into a global citizen with environmentally friendly attitude by making them not only excellent professionals but also good individuals with understanding and regards for human values, pride in their heritage and culture, a sense of right and wrong, yearning for perfection and courage of conviction and action. |

**5.22.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
|  | |
|  | The student shall be able develop conceptual as well as applied knowledge and skills in the field of Biotechnology to attain academic excellence. |
|  | The student shall demonstrate strategic thinking for Problem Analysis and development of Solutions through Biotechnological knowledge. |
|  | The student shall be able to use and apply latest IT tools to analyze, biological, statistical and technical big data. |
|  | The student shall be able to demonstrate innovative and sustainable approach in order to solve scientific problems. |
|  | The student shall be confident in interpersonal skills relationship-building and communication. |
|  | The student shall be able to demonstrate Team work and Conflict resolution through leadership qualities. |
|  | The student shall be able to execute their knowledge and technical skills for the globalization and environmental conservation. |
|  | The student shall be able to practice the ethical principles and understand their social responsibilities. |
|  | The student shall be able to develop entrepreneurial orientation through innovative and creative decision making. |
|  | The student shall be able to develop lifelong learning approach to create new knowledge from existing knowledge. |

**5.22.3 Programme Operational Objectives**

|  |
| --- |
| **Programme Name – M. Tech. (Biotechnology )** |
| **Programme Operational Objectives** |
| M. Tech. Biotechnology programme will create appropriate resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students to make them adapt to the rapidly changing disruptive technologies in the field of Biotechnology. |
| The programme will **provide** opportunities and environment for innovation and research excellence for the intellectual growth of faculty and students. |
| The programme will **demonstrate** sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| The programme will continuously strive to **build** strong industry interaction, alumni networks and empanelment of expertise from industry while proactively seeking suggestions on curricula and training. |
| The programme will continually **improve** processes and systems with an aim to attain national and international accreditations. |
| The programme will **extend** support to the students in order to facilitate campus recruitment, higher education or starting their own ventures. |
| The programme will **act** ethically to ensure transparency and good governance while discharging various responsibilities to its stakeholders and execution of policies and programs. |
| The programme will **create** opportunities for international exposure for its students and faculty. |

**5.22.4 Programme Learning Outcomes**

|  |  |
| --- | --- |
| **Intended Learning Outcomes** | |
| 1 | The student will develop analytical mindset to find strategic solutions to diverse problems. |
| 2 | The student will have decision making capabilities to find apt and sustainable solutions to complex problems. |
| 3 | The student will apply modern IT tools for acquisition and analysis of biological data. |
| 4 | The student will be able to demonstrate innovative and sustainable approach in order to solve scientific problems. |
| 5 | The student will be confident in communication, interpersonal skills and relationship-building. |
| 6 | The student will be able to demonstrate team work and conflict resolution strategies through leadership qualities. |
| 7 | The student will be a responsible global citizen with environment conserving attitude. |
| 8 | The student will demonstrate ethically, environmentally and socially aware attitude. |
| 9 | The student will develop entrepreneurial skills through innovative and creative decision making. |
| 10 | The student will have lifelong learning approach to create new knowledge from existing knowledge. |

**5.22.5 Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Outcomes** | |
| 1 | M. Tech. Biotechnology programme will promote use of appropriate methodology and pedagogical tools for teaching, learning and development. |
| 2 | The curriculum of the programme will be contemporary and relevant to meet research and industry requirements and benchmarked on global standards by incorporating feedback from all the stakeholders. |
| 3 | The programme shall provide academic facilities, technological resources for teaching and learning to the students |
| 4 | The student of the programme will earn achievements in intra and inter-university Extra Curricular activities. |
| 5 | Faculty and students will be engaged in scholarly and professional activities in order to enhance their competencies and to contribute to the existing body of Knowledge. |
| 6 | The programme will integrate ethics and values in teaching, theory and practice, develop and retain excellent students, faculty and staff. |
| 7 | The programme will facilitate cultivation of cultural and environmental conservation values among students. |
| 8 | The programme shall develop and maintain strong relationship with research institutes, alumni and industry. |
| 9 | The programme shall invite international delegates and speakers for seminars and conferences and various other opportunities for global exposure and will support all the students for quality placements or join family business or start their own venture |
| 10 | The programme shall establish an internal quality cell for operational quality and process improvement for students. |

**5.22.6 Programme Educational Outcome Assessment for M. Tech. Biotechnology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No. for Direct Assessment** | **Target** | **Indirect** | **Tool No. for Indirect Assessment** | **Target** |
| 1 | The student shall be able develop conceptual as well as applied knowledge and skills in the field of Biotechnology to attain academic excellence. | The student will develop analytical mindset to find strategic solutions to diverse problems. | \*Comprehensive Exam | PG/PLO1/CE Framework | 70% students shall pass the exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall demonstrate strategic thinking for Problem Analysis and development of Solutions through Biotechnological knowledge. | The student will develop analytical mindset to find strategic solutions to diverse problems. | Project Report submission | PG/PLO2/Dissertation | 100% students will undertake and complete the Project Report  \* 70% students shall pass the comprehensive exam. | Feedback analysis of internship guide |  | The Industry Internship Guide rates the students between 3-5 ranges on the Likert Scale in the feedback. |
| \*Comprehensive Exam | PG/PLO2/CE Framework |
| 3 | The student shall be able to use and apply latest IT tools to analyze, biological, statistical and technical big data. | The student will apply modern IT tools for acquisition and analysis of biological data. | \*Section 3 of Comprehensive Exam | PG/PLO3/CE Framework | 70% students shall pass the comprehensive exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to demonstrate innovative and sustainable approach in order to solve scientific problems. | The student will be able to demonstrate innovative and sustainable approach in order to solve scientific problems. | Project Report submission | PG/PLO4/CE Framework | 100%students shall complete their project and submit the report. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 5 | The student shall be confident in interpersonal skills relationship-building and communication. | The student will be confident in communication, interpersonal skills and relationship-building. |  |  | 80% students shall achieve a minimum of ‘satisfactory’ outcome attainment level  \* 70% students shall pass the comprehensive exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Rubrics Communication skills | PG/PLO5/ BC |
| \*Comprehensive Exam | PG/PLO5/CE Framework |
| 6 | The student shall be able to demonstrate Team work and Conflict resolution through leadership qualities. | The student will be able to demonstrate team work and conflict resolution strategies through leadership qualities |  |  | 80% students shall achieve a minimum of ‘satisfactory’ outcome attainment level  \* 70% students shall pass the comprehensive exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Rubrics Behavioural Science | PG/PLO6/BS |
| \*Comprehensive Exam | PG/PLO6/CE Framework |
| 7 | The student shall be able to execute their knowledge and technical skills for the globalization and environmental conservation. | The student will be a responsible global citizen with environment conserving attitude. | \* Rubrics Foreign language  \*Section 9 of Comprehensive Exam |  | \* 80% students shall achieve a minimum of ‘satisfactory’ outcome attainment level.  \* 70% students shall pass the comprehensive exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| UG/PLO7/CE Framework |
| 8 | The student shall be able to practice the ethical principles and understand their social responsibilities. | The student will demonstrate ethically, environmentally and socially aware attitude. | \*Plagiarism Checking of Dissertation  \*Comprehensive Exam |  | \* 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%.  \*70% students shall pass the comprehensive exam. | Feedback industry internship guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \*Comprehensive Exam | PG/PLO8/CE Framework |  |  |  |
| 9 | The student shall be able to develop entrepreneurial orientation through innovative and creative decision making. | The student will develop entrepreneurial skills  through innovative and creative decision making. | Section 7 of comprehensive exam. | PG/PLO9/ | 70% students shall pass the exam.  100% students shall submit the project report | Student Exit Survey | PG/PLO/  Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| Project Report submission | PG/PLO9/CE Framework | Alumni Survey | PG/PLO/  Alumni Survey | 80% students shall score ≥ 75% in exit survey. |
| 10 | The student shall be able to develop lifelong learning approach to create new knowledge from existing knowledge. | The student will have lifelong learning approach to create new knowledge from existing knowledge. |  |  | 70% students shall pass the exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| \*Section 8 of Comprehensive Exam | PG/PLO10/CE Framework |

## **5.22.7 Matrix Of PEO`s and PLO`s**

## Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PEO/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** |
| PLO 1 |  |  |  |  |  |  |  |  |  |  |
| PLO 2 |  |  |  |  |  |  |  |  |  |  |
| PLO 3 |  |  |  |  |  |  |  |  |  |  |
| PLO 4 |  |  |  |  |  |  |  |  |  |  |
| PLO 5 |  |  |  |  |  |  |  |  |  |  |
| PLO 6 |  |  |  |  |  |  |  |  |  |  |
| PLO 7 |  |  |  |  |  |  |  |  |  |  |
| PLO 8 |  |  |  |  |  |  |  |  |  |  |
| PLO 9 |  |  |  |  |  |  |  |  |  |  |
| PLO 10 |  |  |  |  |  |  |  |  |  |  |

**5.23 Programme - M. Sc. in Cellular and Molecular Oncology**

**5.23.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide education at M. Sc. level in Cellular and Molecular Oncology and in the futuristic and emerging frontier areas of knowledge , learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regards for human values , pride in their heritage and culture , a sense of right and wrong and yearning for perfection and imbibe attributes of courage of conviction and action |

**5.23.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
| **Educational Goals** | |
|  | The student shall be able to **develop** knowledge and skills to attain academic excellence in the field of cancer biology. |
|  | The student shall **demonstrate** research skills to conduct research in the thrust areas of cancer biology to benefit the society. |
|  | The student shall be able to **use** and **apply** modern IT tools to analyze the biological data to arrive at logical conclusions. |
|  | The student shall be able to **analyze** and **interpret** scientific data to solve technical, conceptual and abstract scientific problems. |
|  | The student shall be able to **develop** effective communication skills to disseminate technical information and ability to **write** effective reports and reviews for scientific journals. |
|  | The student shall be able to **demonstrate** effectiveness and responsibility as an individual as well as in a team while maintaining accountability and output. |
|  | The student shall be able to **develop** global citizenship skills to build a sustainable world community. |
|  | The student shall be able to **interpret** principles of ethics and apply them to develop sensitivity towards various social and cultural issues of the society. |
|  | The student shall be able **develop** networking and entrepreneurship skills and establish links with industry and alumni. |
|  | The student shall be able to **create** the virtue of lifelong learning. |
|  | The student shall be able to **create** and **develop** thought process for environmental preservation by developing environmentally sustainable technologies. |
|  | The student shall be able to **integrate** various aspects of cancer biology to achieve holistic and societal development. |

* + 1. **Programme Operational Objectives**

|  |  |
| --- | --- |
| **Operational Goals** | |
| 1 | MSc. CMO programme will create appropriate resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students. |
| 2 | The programme will provide opportunities and environment for innovation and research excellence for the intellectual growth of faculty and students. |
| 3 | The programme will demonstrate sensitivity to the diverse needs of students and accordingly develop facilities and services. |
| 4 | The programme will continuously strive to build strong industry interaction, alumni networks and empanelment of expertise from industry while proactively seeking suggestions on curricula and training. |
| 5 | The programme will continually improve processes and systems with an aim to attain national and international accreditations. |
| 6 | The programme will extend support to the students in order to facilitate campus recruitment, higher education or starting their own ventures. |
| 7 | The programme will act ethically to ensure transparency and good governance while discharging various responsibilities to its stakeholders and execution of policies and programs. |
| 8 | The programme will create opportunities for international exposure for its students and faculty. |
| 9 | MSc. CMO programme will create appropriate resources, infrastructure and conducive environment for excellence in teaching, learning, research and professional development of students. |

* + 1. **Programme Learning Outcomes**

|  |  |
| --- | --- |
|  | |
| 1 | The student will apply knowledge to develop critical thought and practical understanding of in the field of cancer biology to find solutions for human benefits. |
| 2 | The student will identify, formulate, research literature, review existing knowledge and analyze complex molecular and biochemical problems to reach substantiated conclusions using principles of biology. |
| 3 | The student will apply modern IT tools for acquisition and analysis of biological data. |
| 4 | The student will demonstrate awareness of research principles and technical skills to plan independent Biotechnology research projects. |
| 5 | The student will develop appropriate level of communication skills to effectively disseminate research and technical information and shall be able to summarize scientific results; write effective reports and reviews in scientific journals. |
| 6 | The student will demonstrate the ability to work independently as individuals and flexibly within a team with effectiveness and responsibility. |
| 7 | The student will build skills to evolve into a responsible global citizen. |
| 8 | The student will develop sensitivity to environmental issues and concerns and shall understand principles of ethics within the framework and apply these principles for environmentally and culturally sensitive issues. |
| 9 | The student will apply management principles to manage one’s own work and/or projects and ventures. |
| 10 | The student will organize the role of personal development, self-directed study and discovery in learning to develop life-long learning. |
| 11 | The student will develop appreciation for nature and the need for its preservation and conservation and demonstrate care for the environment by development of environmentally sustainable technologies. |
| 12 | The student will develop the capability to integrate theory, technical information and appropriate research methods for the benefit of society. |

* + 1. **Programme Operational Outcomes**

|  |  |
| --- | --- |
| **Operational Goals** | |
| 1 | M.Sc. Cellular & Molecular Oncology programme will promote use of appropriate methodology and pedagogical tools for teaching, learning and development. |
| 2 | The programme will provide environment for innovation and research and academic facilities, technological resources for teaching and learning to the students. |
| 3 | The programme will facilitate resources to cater diverse needs of the students and faculty to achieve academic excellence. |
| 4 | The programme will develop and maintain strong relationship with research institutes, alumni and industry. |
| 5 | The programme will develop infrastructure and resources to attain national and international accreditations. |
| 6 | The programme will extend support to the students to provide employment, avenues for higher education and starting their own ventures. |
| 7 | The programme will ensure transparency and good governance by integrating ethics and values in teaching, theory and practice. |
| 8 | The programme will invite international delegates and speakers for seminars and conferences and provide various other opportunities for global exposure. |
| 9 | M.Sc. Cellular & Molecular Oncology programme will promote use of appropriate methodology and pedagogical tools for teaching, learning and development. |

* + 1. **Programme Educational Outcome Assessment for Cellular and Molecular Oncology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall be able to develop knowledge and skills to attain academic excellence in the field of Biotechnology. | The student will apply knowledge to develop critical thought and practical understanding of in the field of Biotechnology find solutions for human benefits. | \*Comprehensive Exam | PG/PLO1/CE Framework | 70% students shall pass the exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall demonstrate research skills to conduct research in the thrust areas of Biotechnology to benefit the society. | The student will identify, formulate, research literature, review existing knowledge and analyze complex molecular and biochemical problems to reach substantiated conclusions using principles of biology. | Project report submission | PG/PLO2/Dissertation | 100% students will undertake and complete the Project report | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| \*Comprehensive Exam | PG/PLO2/CE Framework |  |  |
| 3 | The student shall be able to use and apply modern IT tools to analyze the biological data to arrive at logical conclusions. | The student will apply modern IT tools for acquisition and analysis of biological data. | \*Section 3 of Comprehensive Exam | PG/PLO3/CE Framework | 70% students shall pass the comprehensive exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to analyze and interpret scientific data to solve technical, conceptual and abstract scientific problems. | The student will demonstrate awareness of research principles and technical skills to plan independent Biotechnology research projects. | Project report submission | PG/PLO4/ | 100% students shall complete their projects and submit the report | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| PG/PLO4/CE Framework |  |  |
| 5 | The student shall be able to develop effective communication skills to disseminate technical information and ability to write effective reports and reviews for scientific journals. | The student will develop appropriate level of communication skills to effectively disseminate research and technical information and shall be able to summarize scientific results; write effective reports and reviews in scientific journals. | \*Rubrics Communication skills |  | 80% students shall achieve the minimum of “satisfactory” outcome attainment level | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| PG/PLO5/ BC |  |  |
| PG/PLO5/CE Framework |  |  |
| 6 | The student shall be able to demonstrate effectiveness and responsibility as an individual as well as in a team while maintaining accountability and output. | The student will demonstrate the ability to work independently as individuals and flexibly within a team with effectiveness and responsibility. | \* Behavioural Science rubrics |  | 80% students shall achieve the minimum of “satisfactory” outcome attainment level | Student Exit Survey | PG/PLO6/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | PG/PLO6/BS |  |  |
| \* Comprehensive Exam | PG/PLO6/CE Framework |  |  |
| 7 | The student shall be able to develop global citizenship skills to build a sustainable world community. | The student will build skills to evolve into a responsible global citizen. | \* Rubrics FBL | UG/PLO7/CE Framework | 80% students shall achieve the minimum of “satisfactory” outcome attainment level | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 8 | The student shall be able to interpret principles of ethics and apply them to develop sensitivity towards various environmental and cultural issues of the society. | The student will develop sensitivity to environmental issues and concerns and shall understand principles of ethics within the framework and apply these principles for environmentally and culturally sensitive issues. | \*Plagiarism Checking of project report | PG/PLO8/CE Framework | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| 9 | The student shall be able develop networking and entrepreneurship skills and establish links with industry and alumni. | The student will apply management principles to manage one’s own work and/or projects and ventures. | Section 7 of comprehensive exam  Project report submission | PG/PLO9/ | 70% students shall pass the exam  100% students shall submit the project reports | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 10 | The student shall be able to create the virtue of lifelong learning. | The student will organize the role of personal development, self-directed study and discovery in learning to develop life-long learning. | \*Section 8 of Comprehensive Exam | PG/PLO10/CE Framework | 70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 11 | The student shall be able to create and develop thought process for environmental preservation by developing environmentally sustainable technologies. | The student will develop appreciation for nature and the need for its preservation and conservation and demonstrate care for the environment by development of environmentally sustainable technologies. | \*Section 9 of Comprehensive Exam | PG/PLO11/CE Framework | 70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 12 | The student shall be able to integrate various aspects of biotechnology to achieve holistic and Societal development. | The student will develop the capability to integrate theory, technical information and appropriate research methods for the benefit of society. | \*Comprehensive Exam | PG/PLO12/CE Framework | 70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |

**5.23.7 Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)**

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

## Mapping of Assessment Measures to Operational Outcomes

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Assessment Tools  Programme Operational  Outcomes (example) | Student Feedback | Faculty Qualification | Graduation rate | Co-curricular and Extra Curricular activities | Publications and Professional membership | Attrition rate | Value Added courses | Feedback system | Plagiarism | Community and social sector | Organizing cultural programs | Day of belongingness | Study abroad and exchange program for students) | Accreditation | Seminar/Workshop/Guest lecture/Conference | Placement | Involvement of all stake holders |
| Programme Operational  Outcome 1  M.Sc. CMO programme will promote use of appropriate methodology and pedagogical tools for teaching, learning and development. | **X** | **X** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Programme Operational  Outcome 2  The programme will provide environment for innovation and research and academic facilities, technological resources for teaching and learning to the students.. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **X** |
| Programme Operational  Outcome 3  The programme will facilitate resources to cater diverse needs of the students and faculty to achieve academic excellence. |  |  | **X** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| The programme will develop and maintain strong relationship with research institutes, alumni and industry. |  |  |  |  | **X** |  |  |  |  |  |  |  |  |  |  |  |  |
| Programme Operational  Outcome 5  The programme will develop infrastructure and resources to attain national and international accreditations. |  |  |  | **X** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Programme Operational  Outcome 6  The programme will extend various opportunities for global exposure and will support all the students for quality placements or join family business or start their own venture |  |  |  |  | **X** |  |  |  |  |  |  |  |  |  |  |  |  |
| Programme Operational  Outcome 7  The programme will ensure transparency and good governance by integrating ethics and values in teaching, theory and practice. |  |  |  |  |  | **X** | **X** | **X** | **X** |  |  |  |  |  |  |  |  |
| Programme Operational  Outcome 8  The programme will invite international delegates and speakers for seminars and conferences and provide various other opportunities for global exposure. |  |  |  |  |  |  |  |  |  | **X** | **X** | **X** |  |  |  |  |  |

### **5.24 Programme - M. Sc. in Stem Cell Science & Technology**

## **5.24.1 Mission Statement**

|  |
| --- |
| **Programme Mission** |
| To provide education at M. Sc levels in Stem Cell Science and Technology (SST) and in the futuristic and emerging frontier areas of knowledge , learning and research and to develop the overall personality of students by making them not only excellent professionals but also good individuals with understanding and regards for human values , pride in their heritage and culture , a sense of right and wrong and yearning for perfection and imbibe attributes of courage of conviction and action. |

## **5.24.2 Programme Educational Objectives (PEOs)**

|  |  |
| --- | --- |
| 1 | The students shall be able to develop specialized theoretical and practical knowledge in stem cell science and allied areas |
| 2 | The students shall be able to develop in-depth understanding of tissue regeneration |
| 3 | The students shall be able to develop ability for analyses and interpretation of scientific data to solve technical, conceptual and abstract scientific problems using modern IT tools |
| 4 | The students shall be able to facilitate ability to develop research projects related to various aspects of stem cells |
| 5 | The students shall be able to develop effective communication skills to author articles, reports and reviews in order to disseminate technical knowledge and information |
| 6 | The students shall be able to develop effectively as an individual as well as a member in a team |
| 7 | The students shall be able to solve problems in this specific area of life sciences and by contributing to society exemplify the role of a Global citizen |
| 8 | The students shall be able to develop an understanding of ethical conduct of stem cell research |
| 9 | The students shall demonstrate applicability of their learning for sustainability and environmental responsibility |
| 10 | The student shall be able to integrate advancement of research at the National level with the International level |
| 11 | The student shall demonstrate applicability of their learning for sustainability and environmental responsibility |
| 12 | The students shall demonstrate capabilities to integrate theory and practice for applied research to develop novel products, processes and technologies in related areas |

* + 1. **Programme Operational Objectives**

|  |  |
| --- | --- |
| 1 | M.Sc. (Stem Cell Science and Technology) programme aims to help advance the University’s goal of achieving academic excellence by providing valuable resources to students. |
| 2 | The programme will facilitate an academically conducive environment for holistic development of students. |
| 3 | The institute will provide support for research excellence and facilitate patenting of innovation and subsequent commercialization. This will contribute to increase in intellectual capital of the institute. |
| 4 | The programme aims to inculcate core values of the university and ethical conduct amongst students, faculty and staff. |
| 5 | The programme will encourage cultural diversity and a sense of social and environmental responsibility. |
| 6 | The institute will provide opportunities for international collaborations and exposure to faculty and students. |
| 7 | The programme will proactively build strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training. |
| 8 | The programme will facilitate employment opportunities and also support students to start their own ventures. |
| 9 | The programme will facilitate good governance in discharge of responsibilities and execution of policies and programs. |

**5.24.4 Programme Learning Outcomes**

|  |  |
| --- | --- |
| 1 | The student will develop theoretical and practical knowledge in all aspects of stem cells |
| 2 | The student will develop in-depth understanding of stem cells and their applications |
| 3 | The student will develop an ability to evaluate and interpret range of complex technical, conceptual or abstract problems related to stem cells using IT tools |
| 4 | The student will develop awareness of research principles and technical skills to plan independent stem cell research. Evaluate and interpret results for advancement of science. |
| 5 | The student will develop effective communicate in order to author articles, reports and reviews in order to disseminate technical information |
| 6 | The student will demonstrate working as individuals and flexibly within a team with effectiveness and responsibility. |
| 7 | The students will solve problems in this specific area of life sciences and by contributing to society exemplify the role of a Global citizen learning. |
| 8 | The student will develop appreciation of ethical standards and issues related to stem cell research and their practice in clinical applications. |
| 9 | The student will develop comprehension capability to integrate theory, appropriate research methods and technical information and apply to develop new products/technologies. |
| 10 | The student will develop the correct viewpoints on latest breakthroughs in stem cell science and be able to translate them confidently |
| 11 | The student will develop their abilities to recognize solutions for environmental and social impacts on sustainable approaches to complex problems. |
| 12 | The student will contribute to science, technology and society |

**5.24.5 Programme Operational Outcomes**

|  |  |
| --- | --- |
| 1 | M.Sc.(Stem Cell Science and Technology) programme aims to help advance the University’s goal of achieving academic excellence by providing valuable resources to students. |
| 2 | The programme will facilitate an academically conducive environment for holistic development of students. |
| 3 | The institute will provide support for research excellence and facilitate patenting of innovation and subsequent commercialization. This will contribute to increase in intellectual capital of the institute. |
| 4 | The programme aims to inculcate core values of the university and ethical conduct amongst students, faculty and staff. |
| 5 | The programme will encourage cultural diversity and a sense of social and environmental responsibility. |
| 6 | The institute will provide opportunities for international collaborations and exposure to faculty and students. |
| 7 | The programme will proactively build strong relationships with corporates and utilize network of alumni to open communication channels and seek suggestions on curricula, pedagogy, syllabus and training. |
| 8 | The programme will facilitate employment opportunities and also support students to start their own ventures. |
| 9 | The programme will facilitate good governance in discharge of responsibilities and execution of policies and programs. |

**5.24.6 Programme Educational Outcome Assessment for Stem Cell Science & Technology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **PEO** | **PLO** | **Direct** | **Tool No for Direct Assessment** | **Target** | **Indirect** | **Tool No for Indirect Assessment** | **Target** |
| 1 | The student shall be able to develop knowledge and skills to attain academic excellence in the field of Biotechnology. | The student will apply knowledge to develop critical thought and practical understanding of in the field of Biotechnology find solutions for human benefits. | \*Comprehensive Exam | PG/PLO1/CE Framework | 70% students shall pass the exam. | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 2 | The student shall demonstrate research skills to conduct research in the thrust areas of Biotechnology to benefit the society. | The student will identify, formulate, research literature, review existing knowledge and analyze complex molecular and biochemical problems to reach substantiated conclusions using principles of biology. | Project report submission | PG/PLO2/Dissertation | 100% students will undertake and complete the Project report | Feedback of Industry Internship Guide | PG/PLO/Exit Survey | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback |
| \*Comprehensive Exam | PG/PLO2/CE Framework |  |  |
| 3 | The student shall be able to use and apply modern IT tools to analyze the biological data to arrive at logical conclusions. | The student will apply modern IT tools for acquisition and analysis of biological data. | \*Section 3 of Comprehensive Exam | PG/PLO3/CE Framework | 70% students shall pass the comprehensive exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 4 | The student shall be able to analyze and interpret scientific data to solve technical, conceptual and abstract scientific problems. | The student will demonstrate awareness of research principles and technical skills to plan independent Biotechnology research projects. | Project report submission | PG/PLO4/ | 100% students shall complete their projects and submit the report | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| PG/PLO4/CE Framework |  |  |
| 5 | The student shall be able to develop effective communication skills to disseminate technical information and ability to write effective reports and reviews for scientific journals. | The student will develop appropriate level of communication skills to effectively disseminate research and technical information and shall be able to summarize scientific results; write effective reports and reviews in scientific journals. | \*Rubrics Communication skills |  | 80% students shall achieve the minimum of “satisfactory” outcome attainment level | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| PG/PLO5/ BC |  |  |
| PG/PLO5/CE Framework |  |  |
| 6 | The student shall be able to demonstrate effectiveness and responsibility as an individual as well as in a team while maintaining accountability and output. | The student will demonstrate the ability to work independently as individuals and flexibly within a team with effectiveness and responsibility. | \* Behavioural Science rubrics |  | 80% students shall achieve the minimum of “satisfactory” outcome attainment level | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
|  | PG/PLO6/BS |  |  |
| \* Comprehensive Exam | PG/PLO6/CE Framework |  |  |
| 7 | The student shall be able to develop global citizenship skills to build a sustainable world community. | The student will build skills to evolve into a responsible global citizen. | \* Rubrics FBL | UG/PLO7/CE Framework | 80% students shall achieve the minimum of “satisfactory” outcome attainment level | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 8 | The student shall be able to interpret principles of ethics and apply them to develop sensitivity towards various environmental and cultural issues of the society. | The student will develop sensitivity to environmental issues and concerns and shall understand principles of ethics within the framework and apply these principles for environmentally and culturally sensitive issues. | \*Plagiarism Checking of project report | PG/PLO8/CE Framework | 100% Students are checked for plagiarism in NTCC report submissions and are allowed to appear for viva-voce upon obtaining plagiarism % below 15%. | Feedback of Industry Internship Guide |  | The Industry Internship Guide rates the students between 3-5 range on the Likert Scale in the feedback. |
| 9 | The student shall be able develop networking and entrepreneurship skills and establish links with industry and alumni. | The student will apply management principles to manage one’s own work and/or projects and ventures. | Section 7 of comprehensive exam  Project report submission | PG/PLO9/ | 70% students shall pass the exam  100% students shall submit the project reports | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 10 | The student shall be able to create the virtue of lifelong learning. | The student will organize the role of personal development, self-directed study and discovery in learning to develop life-long learning. | \*Section 8 of Comprehensive Exam | PG/PLO10/CE Framework | 70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 11 | The student shall be able to create and develop thought process for environmental preservation by developing environmentally sustainable technologies. | The student will develop appreciation for nature and the need for its preservation and conservation and demonstrate care for the environment by development of environmentally sustainable technologies. | \*Section 9 of Comprehensive Exam | PG/PLO11/CE Framework | 70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |
| 12 | The student shall be able to integrate various aspects of biotechnology to achieve holistic and Societal development. | The student will develop the capability to integrate theory, technical information and appropriate research methods for the benefit of society. | \*Comprehensive Exam | PG/PLO12/CE Framework | 70% students shall pass the exam | Student Exit Survey | PG/PLO/Exit Survey | 80% students shall score ≥ 75% in exit survey. |

**5.24.7 Mapping of Intended Programme Learning Outcomes to Broad-Based Programme Educational Objectives (PEOs)**

The broad-based student learning goals identified in Section I above encompass the intended student learning outcomes as articulated in this section, and are general composites or summaries of these outcomes. These relationships are summarized in the outcomes-to-goals mapping below (**Note:** √ **in a given cell of the table indicates the intended learning outcome in that row is associated with the learning goal in that column**.):

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Matrix Of PEO`s and PLO`s**   |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **PEO/PLO** | **PEO 1** | **PEO 2** | **PEO 3** | **PEO 4** | **PEO 5** | **PEO 6** | **PEO 7** | **PEO 8** | **PEO 9** | **PEO 10** | **PEO 11** | **PEO 12** | | PLO 1 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 2 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 3 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 4 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 5 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 6 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 7 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 8 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 9 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 10 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 11 |  |  |  |  |  |  |  |  |  |  |  |  | | PLO 12 |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |

**Section VI:**

**Domain Operational Outcomes & Operational Outcome Assessment Plan**

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# Operational Assessment

# OPERATIONAL OUTCOME ASSESSMENT PLAN

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl. No.** | **Broad-Based Operational Goals** | **Intended Operational Outcomes for the DBB** | **Assessment Measures/Methods for Intended Operational Outcomes** | **Performance objectives (Targets/Criteria** |
| 1 | FBB intends to provide educational excellence in teaching/academic delivery. | 1.1 FBB will promote use of appropriate methodology and pedagogical tools for teaching, learning and development. | * Student feedback of course faculty. * Faculty Qualifications and Experience Files. | * 80% faculty shall have satisfactory feedback. * 90% faculty shall be either Ph.D or have industry experience |
| 1.2 The curriculum will be contemporary and relevant to meet research and industry requirements and benchmarked on global standards by incorporating feedback from all the stakeholders. | * Stakeholders feedback, peer-group feedback and analysis of the same for incorporation in curriculum. * Minutes of Meetings of Area Advisory Board, Board of Studies and Academic Council. | * Curriculum shall be reviewed periodically (at least once in 3 years) |
| 1.3 The student of FBB will graduate in the stipulated time period | * Graduation rate in convocation report. * on completion of Registration period (N) * during extended period for (N+N for Ph.D, N+1+1 for PG and N+2+1 for UG) | * At least 85% students shall graduate on completion of registration period (N) * 15% or remaining shall pass   during extended period for (N+N for Ph.D, N+1+1 for PG and N+2+1 for UG) |
| 1.4 University shall provide academic facilities, technological Resources for teaching and learning in FBB | * Teaching, learning aids, resources, such as labs, library, journals, database, softwares, Inventory of all technology equipment in classrooms, computer labs, academic offices, and faculty offices. | * 90% classrooms, teaching laboratories, computer labs., academic offices and faculty offices are equipped with technical equipments. |
| 2 | FBB will provide an academically conducive environment for holistic development of students. | 2.1 The student of FBB will earn achievements in intra and inter-university Extra Curricular activities. | * Functional and area specific club, Committees, Sports Events, co-curricular and extra curricular activities and student’s participation in inter institutional competition, under guidance of faculty members. * List of Award winners | * Every student and faculty member shall be a part of at least one club or committee. |
| 3 | FBB will facilitate environment for innovation and research excellence for the intellectual growth of faculty and students | 3.1 Faculty and students will be engaged in scholarly and professional activities in order to enhance their competencies and to contribute to the existing body of Knowledge. | Data about research work and other scholar activities such as:   * Scholarship of teaching; published and unpublished articles, manuscripts, books, curriculum review and evaluation of teaching material. * Scholarship of Discovery: published articles, manuscripts, papers presented, dissertations/ thesis, * Scholarship of Integration: published articles, reviews, manuscripts, papers presented, dissertations/ thesis, conference and workshops attended. * Scholarship of application: published articles, manuscripts, papers presented, consultations, programme evaluation. * Professional activities: Conference, workshop, professional meeting attendance, professional membership. * Patenting innovation- filing of provisional and complete patents | * 100% faculty shall be engaged in at least one scholarly activity. * Students will be encouraged to perform research and also publish their findings. |
| 4 | FBB will facilitate cultivation of core values of the university and ethical conduct amongst students, faculty and staff. | 4.1 The FBB will integrate ethics and values in teaching, theory and practice, develop and retain excellent students, faculty and staff. | * Attrition Rate * Courses embedded in curriculum such as behavioural sciences * Human values quarter activities * Plagiarism check * Feedback system. | * Attrition rate shall be below 10% annually |
| 5 | FBB will encourage cultural diversity and a sense of social and environmental responsibility. | 5.1 FBB will facilitate cultivation of cultural and environmental conservation values among students. | * List of community/social service projects * Organizing events related to sensitizing faculty and students to environmental and societal issues. * Day of Belongingness. * Celebration of festivals for culturally diverse set of students | * At least 80% faculty and students should be engaged in organizing/participating in various events and activities |
| 6 | FBB will provide ample opportunities for international exposure to faculty and students. | 6.1 FBB will facilitate joint research collaborations, invite international delegates and speakers for seminars and conferences and various other opportunities for global exposure. | * Study Abroad Programme with renowned Universities * MoU with universities of repute * International Conferences/ Seminars/Workshops * International Collaborative Research. | * 100% students and faculty of DBB shall be offered opportunity for international exposure through various programmes designed for the purpose |
| 7 | FBB will formulate an alumni network and build strong relationship with industry while proactively seeking suggestions on curricula and training. | 7.1 FBB shall develop and maintain strong relationship with research institutes, consultancies. | * Alumni Database * Industrial Interaction Forums | * Industry experts shall be invited at least once a semester. |
| 7.2 Shall maintain alumni network and keep the curriculum responsive to industry needs. | * Industry visits * Empanelment of experts from research organizations and industry on Area advisory board and Board of studies. * Career Counseling Sessions | * At least one member representing alumni and /or industry shall be on the board deciding program structure |
| 8 | FBB will facilitate employment opportunities and also support students to start their own ventures. | 8.1 FBB will support all the students for quality placements or join family business or start their own venture | * Quality of placements   (company profile, job profile, salary package offered)   * List of students placed. * List of industries visiting campus * List of students opting for and securing higher education | * 80% students shall either be placed or shall opt for higher education or shall join family business or shall start their own ventures. |
| 9 | FBB will implement good governance in discharge of responsibilities and execution of policies and programs | 9.1 FBB shall establish an internal quality cell for operational quality and process improvement. | Reports of various:   * Statutory bodies, * Accreditation bodies, * External evaluators report. * BSI Report. * Quality Audit Report by QAE. | * FBB shall conduct periodic meetings as per regulations |

**Section VII**

**Linkage of outcomes assessment with strategic planning**

**STRATEGIC PROCESS OF CONTINUOUS IMPROVEMENTS**

Student Feedback Action Plan

1. Self Assessment by Faculty and action plan for Course Delivery.
2. Discussion with HoD/HoI about action plan for Course Delivery.
3. Implement Action Plan

**Stage 1:** Post Commencement of Programme

1. Self Assessment by Faculty and action plan for improving Teaching Learning Strategy.
2. Discussion with HoD/HoI about Teaching Learning Strategy.
3. Action plan for self development of Faculty.
4. Input for Course Curriculum revision/updating.
5. Assessment of Teaching Learning Outcome
6. Improvement in Teaching Learning Strategy

**Stage 2: Pre Exam**

Course Review Committee (CRC) for Curriculum Development

1. Future Courses of action for Course Delivery improvement.
2. Effectiveness of Courses Delivery by Faculty.
3. Future Courses of Action for course planning by Faculty
4. Faculty Development Need Analysis
5. Course Curriculum improvement.

Area Advisory Board (AAB)

Documents / Records / Minutes

Programme Structure Update

1. Feedbacks from various Stakeholders.
2. Norms of various Statutory/Regulatory/Accreditation bodies.

Programme Review Committee (PRC) for Programme Structure, PEOs, PLOs & Assessment.

Board of Studies (BoS)

Academic Council (AC)

Course Curriculum Update

**Section – VIII**

**APPENDICES**

**RUBRICS**

**PROGRAMME OUTCOME ASSESSMENT FOR COMMUNICATION SKILLS THROUGH RUBRICS**

Amity University Uttar Pradesh has designed this outcome assessment plan with an objective to assess the programme outcome for communication skills through rubrics and evaluate the satisfactory implementation of the programme.

1. **Short Title, Application and Commencement**
   1. The Assessment Plan may be called **Programme Outcome Assessment (POA) for Communication Skills (CS) through Rubrics.**
   2. The Assessment Plan shall apply to all the students of Amity University, Noida Campus.
   3. The Assessment Plan shall come into force with effect from the date of approval.
2. **Introduction**

The Communication Skills courses aim at improving the quality of verbal and non-verbal communication of students of Amity University by enabling them to learn this important life skill through a systematic implementation of the courses by incorporating them in the various programmes run by the departments. It is a planned course designed at improving effective communication by combining a set of skills including visual codes and signals, engaged listening and the ability to communicate assertively.

The Assessment methods are ways to ascertain (“measure”) student achievement levels associated with stated student learning outcomes (SLOs). Programs are free to select assessment methods appropriate to their discipline or service but the choices must be valid and reliable.

Amity University acknowledges that as an educational provider it has a unique responsibility to provide a rationale for assigning grades to subjectively scored assessments. A rubric is a powerful communication tool and when shared among constituents it communicates in concrete and observable terms what we value most. It also provides a means to clarify our vision of excellence and conveys it to our students.

1. **Objectives of POA of CS through Rubrics**
2. To assess the intended student learning outcome of the course being implemented.
3. To evaluate if the recipients have been capable of developing an engaging and responsive communication style.
4. To reflect on the development of communication skills as a tool to sustain in a modern globalized workplace.
5. To help students understand what the desired performance is and what it looks like.
6. **Guidelines**

**A)** The composition of the **POA Committee of CS through Rubrics** shall be:

          a) HOI/Nominee (Host Institution)

b) PL/Programme Coordinator

c) Core Faculty/Member Corporate Resource Center

d) Communication Skills Faculty

**B) Functions** :

The Committee shall be responsible for:

* Organizing the Board and implementation of Rubrics
* Preparing list of students for the board
* Scheduling of the implementation of Rubrics in the Annual Academic Planning
* Liasoning with the concerned **POA Committee** for the implementation of the Rubrics
* The HOI would suggest dates for implementation of the Rubrics to the concerned institution. The said dates would be confirmed by the HOI- AIESR & AICC
* The Boards for the implementation of the Rubrics would be conducted at a designated place specified by the concerned HOI.
* The Institutional **POA Committee** would be responsible for the arrangement of resources for the smooth implementation of the Rubrics.
* The Institutional **POA Committee** will also be responsible for compilation and submission of results to the Controller of Examinations.
* The Board after the completion of implementation of Rubrics will submit the assessment countersigned by all designated members to the concerned HOI.
* A copy of attendance sheet needs to be maintained by the respective institution as well as the concerned Communication Skills faculty.

**C)**  **Assessment:**

a)     On the completion of every even semester the student would be evaluated on the basis of four descriptors which are in tandem with the course objectives and SLOs of courses taught in every two successive semester.

b)    The descriptors are evaluated on the basis of parameters listed below :

a)    Unsatisfactory

b)    Needs Improvement

c)    Satisfactory

d)    Proficient

e)     Distinguished

**D)** The Institutional **POA Committee** will also be responsible for compilation and submission of results to the Controller of Examinations.

**E)**  Scale for Assessment

1. The student would be rated for the descriptor on the parameters mentioned. The parameters are assigned weightage which is as follows:

|  |  |
| --- | --- |
| 0 | Unsatisfactory |
| 1 | Needs Improvement |
| 2 | Satisfactory |
| 3 | Proficient |
| 4 | Distinguished |

1. A score of the student would be generated for all descriptors and would be analyzed according to the mentioned scale.

|  |  |
| --- | --- |
| <=8 | Needs Improvement |
| 09-11 | Satisfactory |
| 12-14 | Partly Achieved |
| 15-16 | Fully Achieved |

1. We would have to generate this assessment for all sections and then calculate the same for the complete programme.
2. The compiled result sheets student-vise, section-vise, and programme-vise need to be submitted by the constituted **POA Committee** to the concerned HOI to be further handed over to the Controller of Examinations.
3. **Process:**

Amity University follows a systematic Process commencing from the delivery of the course modules to conduct of group discussions and presentations and finally evaluate the effectiveness of Programme in terms of learning outcomes through implementation of Rubrics. The process is as follows:

**6) Evaluate the effectiveness of Programme through feedback**

An important function of the **POA Committee** is to assess the impact of communication skills which is very essential for continuous improvement and to assess whether the objectives of the various programmes are realized. This will also help to identify the gaps for further improvement of the courses to help the students to face the challenges of the present day globalized competitive environment.

This can be done through a graphical analysis after the completion of each semester.

**Faculty of Arts, Humanities & Social Sciences and Journalism/ Mass Communication/ Media**

**Rubrics for Assessment of Communication Skills for 1st Year of Three Year Undergraduate Programme**

**ASSESSMENT PARAMETERS:**

* Verbal communication
* Non-verbal communication

**TOOLS USED FOR ASSESSMENT:**

* Written Test
* Group Discussion
* Presentations

**COMPOSITION OF ASSESSMENT BOARD**

* Communication Skills Faculty
* Program Leader/ Program Co-coordinator
* Any other senior faculty

**SCORE SHEET: INDIVIDUAL**

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=8 | Needs improvement |
| 9-11 | Satisfactory |
| 12-14 | Partly Achieved |
| 15-16 | Fully Achieved |

**\*Students scoring 9 or above fall in the passing criteria.**

**SCORE SHEET: PROGRAMME/ BATCH**

|  |  |
| --- | --- |
| **Outcome Attainment Levels** | **Percentage of Students** |
| Needs improvement |  |
| Satisfactory |  |
| Partly Achieved |  |
| Fully Achieved |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Communication Skills – UG**  **Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | |
| **Components** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** | **Score** |
| Usage of Grammar | The learner is unable to use correct grammar in paragraphs and in other forms of written communication | The learner is able to manifest proper usage of basics of grammar in paragraphs and in other forms of written communication | The  learner exhibits proficiency in correct usage of simple grammatical concepts and in other forms of written communication | The learner shows advanced proficiency in correct usage of simple grammatical concepts and in other forms of written communication | The learner shows advanced proficiency in correct usage of complex grammatical concepts and in other forms of written communication |  |
| Linguistic Accuracy in Oral Communication | The learner is unable to use appropriate accent and intonation | The learner is able to use appropriate accent and intonation | The learner is able to use suitable accent and intonation | The learner is able to show developed proficiency in delivering proper accent and intonation | The learner is able to show expertise in delivering the subtle nuances of a developed accent and intonation |  |
| Aspects of Verbal Communication | The learner is unable to manifest communicative competence with the 7c's of communication | The learner is able to manifest communicative competence with the 7c's of communication | The learner shows proficiency in the manifestation of communicative competence with the 7c's of communication | The learner shows developed proficiency in the understanding and manifestation of communicative competence with the 7c's of communication | The learner will be able to apply analytical capability in comprehension of complex texts with communicative competence with the 7c's of communication |  |
| Significance of Non-Verbal Communication | The learner exhibits inadequate comprehension of visual codes and KOPPACT. | The learner exhibits developing proficiency in understanding of visual codes and KOPPACT | The learner exhibits increased proficiency in understanding of visual codes and KOPPACT | The learner exhibits developed proficiency in understanding and KOPPACT | The learner's Visual codes are in concurrence with the verbal communication and KOPPACT |  |
| **Total Score** | | | | | |  |

**Faculty of Arts, Humanities & Social Sciences and Journalism/ Mass Communication/ Media**

**Rubrics for Assessment of Communication Skills for 2nd Year of Three Year Undergraduate Programme**

**ASSESSMENT PARAMETERS:**

* Verbal communication
* Non-verbal communication

**TOOLS USED FOR ASSESSMENT:**

* Written Test
* Group Discussion
* Presentations

**COMPOSITION OF ASSESSMENT BOARD**

* Communication Skills Faculty
* Program Leader/ Program Co-coordinator
* Any other senior faculty

**SCORE SHEET: INDIVIDUAL**

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=8 | Needs improvement |
| 9-11 | Satisfactory |
| 12-14 | Partly Achieved |
| 15-16 | Fully Achieved |

**\*Students scoring 9 or above fall in the passing criteria.**

**SCORE SHEET: PROGRAMME/ BATCH**

|  |  |
| --- | --- |
| **Outcome Attainment Levels** | **Percentage of Students** |
| Needs improvement |  |
| Satisfactory |  |
| Partly Achieved |  |
| Fully Achieved |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Communication Skills – UG**  **Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | |
| **Components** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** | **Score** |
| Aspects of Written  Communication | The learner displays inability to write class notes, memos and other forms of correspondence | The learner displays ability to write class notes, memos and other forms of correspondence | The learner displays proficiency in writing class notes, memos and other forms of correspondence | The learner displays competence in writing class notes, memos and other forms of correspondence | The learner displays advanced capability in all forms of written communication |  |
| Comprehending  Letter Writing | The learner is unable to write structured letters and format is not evident | The learner is able to write structured letter but format is not evident | The learner is able to write structured letters with proper usage of format | The learner is competent in writing simple formal letters with correct content and form | The learner shows advanced proficiency in writing letters which is relevant to the particular situation |  |
| Employability Skills | The learner is unable to understand the basics of dynamics of GD and interview skills | The learner can partially understand the basics of dynamics of GD and interview skills | The learner can respond to the dynamics of GD and interview skills | The learner can respond to the dynamics of GD and interview skills with confidence | The learner can deliver competent and accurate and befitting replies during GD and Interview |  |
| Effective Resume Writing | The learner displays inability in writing Resume using appropriate language and format | The learner displays partial improvement in writing the resume by using satisfactory language and format | The learner can write resume satisfactorily using the language and format according to instructions | The learner can write effective resume using the language and format in an innovative manner | The learner can write flawless resumes by using language and format convincingly with precision |  |
| **Total Score** | | | | | |  |

**Faculty of Arts, Humanities & Social Sciences and Journalism/ Mass Communication/ Media**

**Rubrics for Assessment of Communication Skills for 3rd Year of Three Year Undergraduate Programme**

**ASSESSMENT PARAMETERS:**

* Verbal communication
* Non-verbal communication

**TOOLS USED FOR ASSESSMENT:**

* Written Test
* Group Discussion
* Presentations

**COMPOSITION OF ASSESSMENT BOARD**

* Communication Skills Faculty
* Program Leader/ Program Co-coordinator
* Any other senior faculty

**SCORE SHEET: INDIVIDUAL**

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=8 | Needs improvement |
| 9-11 | Satisfactory |
| 12-14 | Partly Achieved |
| 15-16 | Fully Achieved |

**\*Students scoring 9 or above fall in the passing criteria.**

**SCORE SHEET: PROGRAMME/ BATCH**

|  |  |
| --- | --- |
| **Outcome Attainment Levels** | **Percentage of Students** |
| Needs improvement |  |
| Satisfactory |  |
| Partly Achieved |  |
| Fully Achieved |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Communication Skills – UG**  **Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | |
| **Components** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** | **Score** |
| Enhancing Comprehension & vocabulary | The learner is unable to comprehend simple texts and also lacks vocabulary skills | The learner is able to comprehend simple texts and shows improvement in vocabulary skills | The learner is able to comprehend complex texts and improved vocabulary skills | The learner is able to grasp the meaning of complex texts and shows expertise in vocabulary skills | The learner is able to fathom the intricacies of complex texts and effectively uses complicated vocabulary |  |
| Presentation Skills and its Delivery | The learner hesitates throughout the delivery with pauses and weak conclusions | The learner delivers improved presentation with adequate conclusion | The learner delivers fluent presentation with satisfactory conclusion | The learner displays effective oratory with confident conclusion | The learner displays fluent oratory with persuasive and apt conclusion |  |
| Professional  Interpersonal Skills | The learner is unable to comprehend the traits of team work in the workplace | The learner is able to comprehend the  traits of team work in the workplace | The learner comprehends the  importance of coordination and team work in the workplace | The learner comprehends the  importance of initiative, coordination and  team work in the workplace | The learner comprehends the  importance of motivation, initiative and team work in the workplace |  |
| Visual Codes and Etiquettes | The learner exhibits inadequate comprehension of visual codes with improper etiquettes | The learner exhibits developing proficiency in understanding of visual codes with basic etiquettes | The learner exhibits increased proficiency in understanding of visual codes and develops basic etiquettes | The learner exhibits developed proficiency in understanding and comprehension of visual codes with expertise in basic etiquettes | The learner's Visual codes are in concord with the verbal communication and exhibits efficiency, accuracy in basic etiquettes |  |
| **Total Score** | | | | | |  |

**Faculty of Arts, Humanities & Social Sciences and Journalism/ Mass Communication/ Media**

**Rubrics for Assessment of Communication Skills for 1st Year of Postgraduate Programme**

**ASSESSMENT PARAMETERS:**

* Verbal communication
* Non-verbal communication

**TOOLS USED FOR ASSESSMENT:**

* Written Test
* Group Discussion
* Presentations

**COMPOSITION OF ASSESSMENT BOARD**

* Communication Skills Faculty
* Program Leader/ Program Co-coordinator
* Any other senior faculty

**SCORE SHEET: INDIVIDUAL**

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=8 | Needs improvement |
| 9-11 | Satisfactory |
| 12-14 | Partly Achieved |
| 15-16 | Fully Achieved |

**\*Students scoring 9 or above fall in the passing criteria.**

**SCORE SHEET: PROGRAMME/ BATCH**

|  |  |
| --- | --- |
| **Outcome Attainment Levels** | **Percentage of Students** |
| Needs improvement |  |
| Satisfactory |  |
| Partly Achieved |  |
| Fully Achieved |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Communication Skills – PG**  **Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | |
| **Components** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** | **Score** |
| Effective use of LSRW Skills | The learner is unable to manifest analytical capability along with coherence, clarity and conciseness | The learner is able to manifest analytical capability but not with coherence, clarity and conciseness | The learner shows proficiency in the manifestation of analytical capability with coherence, clarity and conciseness | The learner shows developed proficiency in the understanding and manifestation of analytical capability with comprehensive coherence, clarity and conciseness | The learner will be able to apply analytical capability in comprehension of complex texts with comprehensive coherence, clarity and conciseness |  |
| Fluency in oral communication | The learner is unable to initiate communication with clarity in ideas | Learner adequately starts the communication but lacks clarity in ideas | Ability of learner to coherently initiate the communication with clarity in ideas | Learner impressively opens the argument with innovative use of ideas | Learner demonstrates capability of a confident and suave initiation of communication with complex use of ideas |  |
| Interviews and its assessment | The learner is unable to fathom interview questions and shows feelings of nervousness | The learner can partially fathom the interview questions and feels slightly nervous | The learner can respond to interview questions with ease and comfort | The learner can respond to interview questions with confidence and alacrity | The learner can deliver competent and accurate and befitting replies to interview questions with conviction and poise |  |
| Resume and its formats | The learner displays inability in writing Resume by using correct language and format | The learner displays partial improvement in writing the resume by using satisfactory language and format | The learner can write resume satisfactorily using the language and format according to instructions | The learner can write effective resume using the language and format in an innovative manner | The learner can write customised resumes by using language and format convincingly with precision |  |
| **Total Score** | | | | | |  |

**Faculty of Arts, Humanities & Social Sciences and Journalism/ Mass Communication/ Media**

**Rubrics for Assessment of Communication Skills for 2nd Year of Postgraduate Programme**

**ASSESSMENT PARAMETERS:**

* Verbal communication
* Non-verbal communication

**TOOLS USED FOR ASSESSMENT:**

* Written Test
* Group Discussion
* Presentations

**COMPOSITION OF ASSESSMENT BOARD**

* Communication Skills Faculty
* Program Leader/ Program Co-coordinator
* Any other senior faculty

**SCORE SHEET: INDIVIDUAL**

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=8 | Needs improvement |
| 9-11 | Satisfactory |
| 12-14 | Partly Achieved |
| 15-16 | Fully Achieved |

**\*Students scoring 9 or above fall in the passing criteria.**

**SCORE SHEET: PROGRAMME/ BATCH**

|  |  |
| --- | --- |
| **Outcome Attainment Levels** | **Percentage of Students** |
| Needs improvement |  |
| Satisfactory |  |
| Partly Achieved |  |
| Fully Achieved |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Communication Skills – PG**  **Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | |
| **Components** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** | **Score** |
| Presentation-Fluency and Delivery | The learner halts and mumbles throughout the delivery with forced pauses and weak conclusions | The learner delivers Improved presentation with adequate conclusion | The learner delivers fluent presentation with satisfactory conclusion | The learner displays effective oratory with confident rhetoric and apt conclusion | The learner displays fluent oratory with persuasive rhetoric and apt conclusion |  |
| Official Correspondence and Technical Writing | The learner displays inappropriate style with inaccurate  sentence structures filled with  lexical ambiguity | The learner develops formal style with clarity in thought and expression | The learner displays developed formal style and clarity in thought and expression | The learner displays efficiency in writing effective e-mails, reports, articles and drafting policies | The learner displays ability in drafting and all other  forms of technical writing |  |
| Cultural Diversity in Professional Environment | The learner displays inability in adjusting to other cultures and fails to realise importance of maintaining rapport in multicultural context | The learner displays basic idea of cultural diversity in multicultural context | The learner displays good understanding of cultural diversity in multicultural context | The learner demonstrates good understanding of cultural diversity and importance of maintaining rapport in multicultural context | The learner will demonstrate respect for other cultures and simultaneously maintain rapport in multicultural context |  |
| Soft Skills | The learner demonstrates inappropriate gestures, postures, eye movement and inadequate use of space language | The learner delivers appropriate body language which suits the occasion and apt use of space language | The learner delivers suitable body language and also makes maximum use of proxemics | The learner carries perfect body language and also modifies it based on the situation and also displays perfect use of space and definition of zones through the use | The learner carries perfect and original body language along with optimum and perfect use of proxemics |  |
| **Total Score** | | | | | |  |

**Faculty of Arts, Humanities & Social Sciences and Journalism/ Mass Communication/ Media**

**Rubrics for Assessment of Communication Skills for 3rd Year of Three Year Postgraduate Programme**

**ASSESSMENT PARAMETERS:**

* Verbal communication
* Non-verbal communication

**TOOLS USED FOR ASSESSMENT:**

* Written Test
* Group Discussion
* Presentations

**COMPOSITION OF ASSESSMENT BOARD**

* Communication Skills Faculty
* Program Leader/ Program Co-coordinator
* Any other senior faculty

**SCORE SHEET: INDIVIDUAL**

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=4 | Needs improvement |
| 5-6 | Satisfactory |
| 7 | Partly Achieved |
| 8 | Fully Achieved |

**\*Students scoring 5 or above fall in the passing criteria.**

**SCORE SHEET: PROGRAMME/ BATCH**

|  |  |
| --- | --- |
| **Outcome Attainment Levels** | **Percentage of Students** |
| Needs improvement |  |
| Satisfactory |  |
| Partly Achieved |  |
| Fully Achieved |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Communication Skills – PG**  **Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | |
| **Components** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** | **Score** |
| Extemporaneity and speaking publicly | The learner is impervious to the requirement of the target group and fails to handle interactions and discussions | The learner falls inappropriately short of gauging audience reaction and shows adequate management and participation in interactions | The learner tries to improve comprehension of audience reaction and shows appropriate management and participation in interactions | The learner appropriately fathoms and delivers to suit response of target audience and shows originality in interactions | The learner is perfect in gauging and responding to the target audience and manifests creative & befitting administration of interactions/discussions |  |
| Soft Skills | The learner demonstrates inappropriate gestures, postures, eye movement and inadequate use of space language | The learner delivers appropriate body language which suits the occasion and apt use of space language | The learner delivers suitable body language and also makes maximum use of proxemics | The learner carries perfect body language and also modifies it based on the situation and also displays perfect use of space and definition of zones through the use | The learner carries perfect and original body language along with optimum and perfect use of proxemics |  |
| **Total Score** | | | | | |  |

**Faculty of Arts, Humanities & Social Sciences and Journalism/ Mass Communication/ Media**

**Rubrics for Assessment of Business Communication for 1st Year of Masters Programme**

**ASSESSMENT PARAMETERS:**

* Verbal communication
* Non-verbal communication

**TOOLS USED FOR ASSESSMENT:**

* Written Test
* Presentations
* Group Discussion

**COMPOSITION OF ASSESSMENT BOARD**

* Business Communication Faculty
* Program Leader/ Program Co-coordinator
* Any other senior faculty

**SCORE SHEET: INDIVIDUAL**

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=8 | Needs improvement |
| 9-11 | Satisfactory |
| 12-14 | Partly Achieved |
| 15-16 | Fully Achieved |

**\*Students scoring 9 or above fall in the passing criteria.**

**SCORE SHEET: PROGRAMME/ BATCH**

|  |  |
| --- | --- |
| **Outcome Attainment Levels** | **Percentage of Students** |
| Needs improvement |  |
| Satisfactory |  |
| Partly Achieved |  |
| Fully Achieved |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Business Communication – PG**  **Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | |
| **Components** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** | **Score** |
| Communication & Its Process | The learner is unable to understand the process of formal communication in organizations | The learner is able to understand the Nature but cannot understand the process Formal Communication in organizations | The learner shows proficiency in the understanding of the Nature and Process of Formal Communication in organizations | The learner can understand the complex nature of Communication processes in organizations | The learner can apply the nature and process of formal Communication effectively |  |
| Barriers to Effective Communication | The learner cannot understand the barriers to formal communication | The learner has basic understanding of the barriers of formal communication | The learner has a clear understanding of the barriers to effective formal communication | The learner understands the complexity of the barriers to formal communication and can remove some of the barriers | The learner has advanced knowledge of barriers to formal communication and can communicate effectively. |  |
| Strategies for Effective Business Correspondence | The learner cannot write Business Reports and Letters in the proper language and format | The learner can write Business Reports and Letters with some inaccuracies in language and format | The learner can write Business Reports and Letters in a satisfactory manner | The learner can write Business Reports and Letters in an effective manner | The learner can write Business Reports and Letters in a convincing manner |  |
| Job Applications Resumes | The learner cannot write Resumes in proper language and format | The learner cannot write Resume without errors in language and format | The learner can write Resume in a satisfactory manner | The learner can write effective resumes | The learner can write convincing win-win resumes |  |
| **Total Score** | | | | | |  |

**Faculty of Arts, Humanities & Social Sciences and Journalism/ Mass Communication/ Media**

**Rubrics for Assessment of Business Communication for 2nd Year of Masters Programme**

**ASSESSMENT PARAMETERS:**

* Verbal communication
* Non-verbal communication

**TOOLS USED FOR ASSESSMENT:**

* Written Test
* Presentations
* Group Discussion

**COMPOSITION OF ASSESSMENT BOARD**

* Business Communication Faculty
* Program Leader/ Program Co-coordinator
* Any other senior faculty

**SCORE SHEET: INDIVIDUAL**

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=8 | Needs improvement |
| 9-11 | Satisfactory |
| 12-14 | Partly Achieved |
| 15-16 | Fully Achieved |

**\*Students scoring 9 or above fall in the passing criteria.**

**SCORE SHEET: PROGRAMME/ BATCH**

|  |  |
| --- | --- |
| **Outcome Attainment Levels** | **Percentage of Students** |
| Needs improvement |  |
| Satisfactory |  |
| Partly Achieved |  |
| Fully Achieved |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Business Communication – PG**  **Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | |
| **Components** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** | **Score** |
| Formal Presentations Information Packaging and its delivery | The learner does not seem to understand the nature of clarity and confidence in formal presentations. | The learner has a basic understanding of clarity and confidence in formal presentation | The learner can give presentation and with confidence in formal context | The learner can give presentation in formal context with clarity and ease | The learner is proficient in information packaging and can make presentation with precision, clarity and confidence in the formal context |  |
| Interviews as stepping stones to placements | The learner cannot understand the questions of interviewer and feels nervous | The learner can only partially respond to the questions of interviewer and feels slightly nervous | The learner can respond to questions of interviewer with ease. | The learner can respond to questions of the interviewer with clarity and ease and make a favorable impression. | The learner can competently and accurately handle the interviews |  |
| Workplace Communication amidst different cultures | The learner does not have much idea of respecting other cultures and finds it difficult to maintain rapport in the multicultural context | The learner shows some awareness of cultural diversity and understands its important in the multicultural context | The learner has good understanding of cultural diversity in multicultural context | The learner has good understanding of cultural diversity importance of maintaining rapport in multicultural context | The learner will demonstrate respect for other cultures and at the same time maintain rapport in the multicultural context |  |
| Etiquettes, Ethics & rules of conduct in the corporate world | The student has deficient knowledge of business ethics and organizational protocol | The student has a very basic idea of business ethics and organizational protocol | The student demonstrates knowledge of business ethics and organizational protocol | The student is completely aware of business ethics and organizational protocol | The student can behave with proper business etiquette and follow organizational protocol |  |
| **Total Score** | | | | | |  |

**Faculty of Arts, Humanities & Social Sciences and Journalism/ Mass Communication/ Media**

**Rubrics for Assessment of Communication Skills for 1st Year of Five Year Integrated Undergraduate & Postgraduate Programme**

**ASSESSMENT PARAMETERS:**

* Verbal communication
* Non-verbal communication

**TOOLS USED FOR ASSESSMENT:**

* Written Test
* Group Discussion
* Presentations

**COMPOSITION OF ASSESSMENT BOARD**

* Communication Skills Faculty
* Program Leader/ Program Co-coordinator
* Any other senior faculty

**SCORE SHEET: INDIVIDUAL**

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=8 | Needs improvement |
| 9-11 | Satisfactory |
| 12-14 | Partly Achieved |
| 15-16 | Fully Achieved |

**\*Students scoring 9 or above fall in the passing criteria.**

**SCORE SHEET: PROGRAMME/ BATCH**

|  |  |
| --- | --- |
| **Outcome Attainment Levels** | **Percentage of Students** |
| Needs improvement |  |
| Satisfactory |  |
| Partly Achieved |  |
| Fully Achieved |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **Communication Skills – UG+PG INTEGRATED (5 YRS)**  **Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | |
| **Components** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** | **Score** |
| Usage of Grammar | The learner is unable to use correct grammar in paragraphs and in other forms of written communication | The learner is able to manifest proper usage of basics of grammar in paragraphs and in other forms of written communication | The  learner exhibits proficiency in correct usage of simple grammatical concepts and in other forms of written communication | The learner shows advanced proficiency in correct usage of simple grammatical concepts and in other forms of written communication | The learner shows advanced proficiency in correct usage of complex grammatical concepts and in other forms of written communication |  |
| Linguistic Accuracy in Oral Communication | The learner is unable to use appropriate accent and intonation | The learner is able to use appropriate accent and intonation | The learner is able to use suitable accent and intonation | The learner is able to show developed proficiency in delivering proper accent and intonation | The learner is able to show expertise in delivering the subtle nuances of a developed accent and intonation |  |
| Aspects of Verbal Communication | The learner is unable to manifest communicative competence with the 7c's of communication | The learner is able to manifest communicative competence with the 7c's of communication | The learner shows proficiency in the manifestation of communicative competence with the 7c's of communication | The learner shows developed proficiency in the understanding and manifestation of communicative competence with the 7c's of communication | The learner will be able to apply analytical capability in comprehension of complex texts with communicative competence with the 7c's of communication |  |
| Significance of Non-Verbal Communication | The learner exhibits inadequate comprehension of visual codes and KOPPACT. | The learner exhibits developing proficiency in understanding of visual codes and KOPPACT | The learner exhibits increased proficiency in understanding of visual codes and KOPPACT | The learner exhibits developed proficiency in understanding and KOPPACT | The learner's Visual codes are in concurrence with the verbal communication and KOPPACT |  |
| **Total Score** | | | | | |  |

**Faculty of Arts, Humanities & Social Sciences and Journalism/ Mass Communication/ Media**

**Rubrics for Assessment of Communication Skills for 2nd Year of Five Year Integrated Undergraduate & Postgraduate Programme**

**ASSESSMENT PARAMETERS:**

* Verbal communication
* Non-verbal communication

**TOOLS USED FOR ASSESSMENT:**

* Written Test
* Group Discussion
* Presentations

**COMPOSITION OF ASSESSMENT BOARD**

* Communication Skills Faculty
* Program Leader/ Program Co-coordinator
* Any other senior faculty

**SCORE SHEET: INDIVIDUAL**

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=8 | Needs improvement |
| 9-11 | Satisfactory |
| 12-14 | Partly Achieved |
| 15-16 | Fully Achieved |

**\*Students scoring 9 or above fall in the passing criteria.**

**SCORE SHEET: PROGRAMME/ BATCH**

|  |  |
| --- | --- |
| **Outcome Attainment Levels** | **Percentage of Students** |
| Needs improvement |  |
| Satisfactory |  |
| Partly Achieved |  |
| Fully Achieved |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **Communication Skills – UG+PG INTEGRATED (5 YRS)**  **Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | |
| **Components** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** | **Score** |
| Aspects of Written  Communication | The learner displays inability to write class notes, memos and other forms of correspondence | The learner displays ability to write class notes, memos and other forms of correspondence | The learner displays proficiency in writing class notes, memos and other forms of correspondence | The learner displays competence in writing class notes, memos and other forms of correspondence | The learner displays advanced capability in all forms of written communication |  |
| Comprehending  Letter Writing | The learner is unable to write structured letters and format is not evident | The learner is able to write structured letter but format is not evident | The learner is able to write structured letters with proper usage of format | The learner is competent in writing simple formal letters with correct content and form | The learner shows advanced proficiency in writing letters which is relevant to the particular situation |  |
| Employability Skills | The learner is unable to understand the basics of dynamics of GD and interview skills | The learner can partially understand the basics of dynamics of GD and interview skills | The learner can respond to the dynamics of GD and interview skills | The learner can respond to the dynamics of GD and interview skills with confidence | The learner can deliver competent and accurate and befitting replies during GD and Interview |  |
| Effective Resume Writing | The learner displays inability in writing Resume using appropriate language and format | The learner displays partial improvement in writing the resume by using satisfactory language and format | The learner can write resume satisfactorily using the language and format according to instructions | The learner can write effective resume using the language and format in an innovative manner | The learner can write flawless resumes by using language and format convincingly with precision |  |
| **Total Score** | | | | | |  |

**Faculty of Arts, Humanities & Social Sciences and Journalism/ Mass Communication/ Media**

**Rubrics for Assessment of Communication Skills for 3rd year of Five Year Integrated Undergraduate & Postgraduate Programme**

**ASSESSMENT PARAMETERS:**

* Verbal communication
* Non-verbal communication

**TOOLS USED FOR ASSESSMENT:**

* Written Test
* Group Discussion
* Presentations

**COMPOSITION OF ASSESSMENT BOARD**

* Communication Skills Faculty
* Program Leader/ Program Co-coordinator
* Any other senior faculty

**SCORE SHEET: INDIVIDUAL**

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=8 | Needs improvement |
| 9-11 | Satisfactory |
| 12-14 | Partly Achieved |
| 15-16 | Fully Achieved |

**\*Students scoring 9 or above fall in the passing criteria.**

**SCORE SHEET: PROGRAMME/ BATCH**

|  |  |
| --- | --- |
| **Outcome Attainment Levels** | **Percentage of Students** |
| Needs improvement |  |
| Satisfactory |  |
| Partly Achieved |  |
| Fully Achieved |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **Communication Skills – UG + PG Integrated ( 5 Yrs)**  **Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | |
| **Components** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished(4)** | **Score** |
| Enhancing Comprehension & vocabulary | The learner is unable to comprehend simple texts and also lacks vocabulary skills | The learner is able to comprehend simple texts and shows improvement in vocabulary skills | The learner is able to comprehend complex texts and improved vocabulary skills | The learner is able to grasp the meaning of complex texts and shows expertise in vocabulary skills | The learner is able to fathom the intricacies of complex texts and effectively uses complicated vocabulary |  |
| Presentation Skills and its Delivery | The learner hesitates throughout the delivery with pauses and weak conclusions | The learner delivers improved presentation with adequate conclusion | The learner delivers fluent presentation with satisfactory conclusion | The learner displays effective oratory with confident conclusion | The learner displays fluent oratory with persuasive and apt conclusion |  |
| Professional  Interpersonal Skills | The learner is unable to comprehend the traits of team work in the workplace | The learner is able to comprehend the  traits of team work in the workplace | The learner comprehends the  importance of coordination and team work in the workplace | The learner comprehends the  importance of initiative, coordination and  team work in the workplace | The learner comprehends the  importance of motivation, initiative and team work in the workplace |  |
| Visual Codes and Etiquettes | The learner exhibits inadequate comprehension of visual codes with improper etiquettes | The learner exhibits developing proficiency in understanding of visual codes with basic etiquettes | The learner exhibits increased proficiency in understanding of visual codes and develops basic etiquettes | The learner exhibits developed proficiency in understanding and comprehension of visual codes with expertise in basic etiquettes | The learner's Visual codes are in concord with the verbal communication and exhibits efficiency, accuracy in basic etiquettes |  |
| **Total Score** | | | | | |  |

**Faculty of Arts, Humanities & Social Sciences and Journalism/ Mass Communication/ Media**

**Rubrics for Assessment of Communication Skills for 4th Year of Five Year Integrated Undergraduate & Postgraduate Programme**

**ASSESSMENT PARAMETERS:**

* Verbal communication
* Non-verbal communication

**TOOLS USED FOR ASSESSMENT:**

* Written Test
* Group Discussion
* Presentations

**COMPOSITION OF ASSESSMENT BOARD**

* Communication Skills Faculty
* Program Leader/ Program Co-coordinator
* Any other senior faculty

**SCORE SHEET: INDIVIDUAL**

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=8 | Needs improvement |
| 9-11 | Satisfactory |
| 12-14 | Partly Achieved |
| 15-16 | Fully Achieved |

**\*Students scoring 9 or above fall in the passing criteria.**

**SCORE SHEET: PROGRAMME/ BATCH**

|  |  |
| --- | --- |
| **Outcome Attainment Levels** | **Percentage of Students** |
| Needs improvement |  |
| Satisfactory |  |
| Partly Achieved |  |
| Fully Achieved |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **Communication Skills – UG+PG INTEGRATED (5 YRS)**  **Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Programme : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | |
| **Components** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** | **Score** |
| Enhancing Competence in Workplace Communication | The learner is not able to showcase basic comprehension of the intricacies of office communication | The learner is able to showcase basic comprehension of the intricacies of office communication | The learner is able to showcase developed comprehension of the intricacies of office communication | The learner is able to showcase advanced comprehension of the intricacies of office communication | The learner is able to showcase expert comprehension of the intricacies of office communication |  |
| Effective Business Correspondence | The learner is unable to write different kinds of business correspondence in proper language and format | The learner is able to write different kinds of business correspondence in proper language and format | The learner delivers satisfactory performance in writing different kinds of business correspondence in correct language and format | The learner can effectively write different kinds of business correspondence in appropriate language and format | The learner can convincingly write all kinds of business correspondence in apt language and format |  |
| Importance of Cross Cultural Communication in Professional Environment | The learner is unable to understand the nuances of cultural adjustment and the sensitivity attached to it | The learner is able to understand the basic nuances of cultural adjustment and the sensitivity attached to it | The learner displays appropriate understanding of cultural adjustment and the sensitivity attached to it | The learner demonstrates effective understanding of cultural adjustment and the sensitivity attached to it | The learner will demonstrate apt understanding of cultural adjustment and the sensitivity attached to it |  |
| Enhancing Public Speaking Skills | The learner is unable to speak fluently and fails to handle interactions and discussions | The learner is able to speak fluently but fails to handle interactions and discussions | The learner is able to speak fluently and handles interactions and discussions | The learner appropriately speaks and confidently handles interactions and discussions | The learner speaks perfectly and effectively handles interactions and discussions |  |
| **TOTAL SCORE** | | | | | |  |

**Faculty of Arts, Humanities & Social Sciences and Journalism/ Mass Communication/ Media**

**Rubrics for Assessment of Communication Skills for 5th Year of Five Year Integrated Undergraduate & Postgraduate Programme**

**ASSESSMENT PARAMETERS:**

* Verbal communication
* Non-verbal communication

**TOOLS USED FOR ASSESSMENT:**

* Written Test
* Group Discussion
* Presentations

**COMPOSITION OF ASSESSMENT BOARD**

* Communication Skills Faculty
* Program Leader/ Program Co-coordinator
* Any other senior faculty

**SCORE SHEET: INDIVIDUAL**

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=8 | Needs improvement |
| 9-11 | Satisfactory |
| 12-14 | Partly Achieved |
| 15-16 | Fully Achieved |

**\*Students scoring 9 or above fall in the passing criteria.**

**SCORE SHEET: PROGRAMME/ BATCH**

|  |  |
| --- | --- |
| **Outcome Attainment Levels** | **Percentage of Students** |
| Needs improvement |  |
| Satisfactory |  |
| Partly Achieved |  |
| Fully Achieved |  |

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| --- | --- | --- | --- | --- | --- | --- |
| **Communication Skills – UG+PG INTEGRATED (5 YRS)**  **Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | |
| **Components** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** | **Score** |
| Essentials of Creative Writing for Media | The learner is unable to understand the fundamentals of creative writing. | The learner is able to understand the nuances of writing skills specifically meant for media and TV content writing. | The learner shows proficiency in the understanding of formal writing with emphasis on writing for media. | The learner can understand the complexities of creative writing. | The learner should be able to write articles, short stories and novella. |  |
| Barriers to professional language use | The learner cannot understand the barriers of professional language. | The learner develops basic understanding of the barriers of professional use of language. | The learner understands how to use language to his advantage. | The learner understands the complexities of using jargons, clichés, euphemism and code switching. | The learner distinguishes himself in the field of creative writing, content writing, advertisements, scripts for media and brochures. |  |
| Professional Communication in Global Context | The learner displays inability in analysing the complexity of cross functional communication and application of the language | The learner displays ability in analysing the complexity of cross functional communication but incapability in application of the language | The learner displays developed ability in analysing the complexity of cross functional communication and capability in application of the language | The learner displays proficiency in analysing the complexity of cross functional communication and effectiveness in application of the language | The learner displays innovativeness in analysing the complexity of cross functional communication and competence in application of the language |  |
| Developing Contextual  Communication | The learner displays inability in identifying the context of communication and lacks skill to describe the theme with precision | The learner displays ability in identification of formal and informal contexts and developing impactful content | The learner displays increased ability in identification of formal and informal contexts and develops original content | The learner displays proficiency developing case based communication and effectiveness in creation of original content | The learner displays advanced proficiency in analysis and constructive criticism of context and uses good rhetoric and design in different professional communication. |  |
| **TOTAL SCORE** | | | | | |  |

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| **Behavioral Science – PG**  **Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No.:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | | |
| **Sl. NO.** | **Description of Rubrics** | **Unsatisfactory (0)** | **Needs Improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** | **Score** |
| 1 | Able to Understand Self with reference to strength and Weakness | The JOS Does not reflect the conceptual understanding | The JOS slightly reflects the conceptual understanding | The JOS moderately reflects the conceptual understanding | The JOS mostly reflects the conceptual understanding | The JOS completely reflect the conceptual understanding |  |
| 2 | Able to display and demonstrate the concept of Self and associated areas& its application | The individual’s JOS did not cover relevant information of the application based learning | The individual’s JOS slightly covered relevant information of the application based learning | The individual’s JOS somewhat covered relevant information of the application based learning | The individual’s JOS mostly covered relevant information of the application based learning | The individual’s JOS completely covered relevant information of the application based learning |  |
| 3 | Able to Understand and demonstrate the management of conflict | The individual did not initiate and scored low in demonstration of conflict resolution. | The individual slightly initiated and scored relatively better than low in demonstration of conflict resolution. | The individual initiated and scored average on demonstration of conflict resolution. | The individual initiated and scored moderately on demonstration of conflict resolution. | The individual effectively initiated and scored high on demonstration of conflict resolution. |  |
| 4 | Able to Understand and demonstrate interpersonal communication for enhanced interpersonal Relationship | The individual did not initiate and did not exhibit the clarity in terms of interpersonal communication for enhanced interpersonal Relationship | The individual slightly initiated and did exhibit the clarity in terms of better than low interpersonal communication for enhanced interpersonal Relationship | The individual initiated and did exhibit average on the clarity in terms interpersonal communication for enhanced interpersonal Relationship | The individual initiated and did exhibit moderately on demonstration of interpersonal communication for enhanced interpersonal Relationship. | The individual effectively initiated and did exhibit average high on demonstration interpersonal communication for enhanced interpersonal Relationship. |  |
| 5 | The student would be able to engage in collaborative learning with team members to achieve a shared goal. | The individual could not engage at all and collaborative learning with team members to achieve a shared goal | The individual could not engage much in collaborative learning with team members to achieve a shared goal | The individual could somewhat engage in collaborative learning with team members to achieve a shared goal | The individual could moderately engage in collaborative learning with team members to achieve a shared goal | The individual could completely engage in collaborative learning with team members to achieve a shared goal |  |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| 6 | The student would be able to engage in articulation of strengths and weaknesses of team members and constructively evaluate others' work. | The individual could not engage at all in articulation of strengths and weaknesses of team members and constructively evaluate others' work | The individual could not engage much in articulation of strengths and weaknesses of team members and constructively evaluate others' work | The individual could somewhat in articulation of strengths and weaknesses of team members and constructively evaluate others' work | The individual could moderately engage in articulation of strengths and weaknesses of team members and constructively evaluate others' work | The individual could completely comprehend engage in articulation of strengths and weaknesses of team members and constructively evaluate others' work |  |
| 7 | Able to demonstrate the learning of leadership concept and developing own style of leadership | The individual could not demonstrate the learning of leadership concept and developing own style of leadership | The individual could slightly demonstrate the learning of leadership concept and developing own style of leadership | The individual could somewhat demonstrate the learning of leadership concept and developing own style of leadership | The individual could moderately demonstrate the learning of leadership concept and developing own style of leadership | The individual could completely demonstrate the learning of leadership concept and developing own style of leadership |  |
| 8 | Able to demonstrate the learning of excellence | The individual could not demonstrate the learning of excellence | The individual could slightly demonstrate the learning of excellence | The individual could somewhat demonstrate the learning of excellence | The individual could moderately demonstrate the learning of excellence | The individual could completely demonstrate the learning of excellence |  |
| 9 | Ability to demonstration of enhanced personal effectiveness | The individual scored low in demonstration of enhanced personal effectiveness. | The individual slightly scored relatively better than low in demonstration of enhanced personal effectiveness. | The individual scored average on demonstration of enhanced personal effectiveness. | The individual initiated and scored moderately on demonstration of enhanced personal effectiveness. | The individual effectively initiated and scored high on demonstration of enhanced personal effectiveness. |  |
| 10 | Able to Understand and comprehend the concept of lifelong learning through social practices and ethical behavior | The individual could not demonstrate practicing the concept of lifelong learning through social practices and ethical behavior. | The individual could slightly demonstrate practicing the concept of lifelong learning through social practices and ethical behavior. | The individual could average demonstrate practicing the concept of lifelong learning through social practices and ethical behavior. | The individual could moderately demonstrate practicing the concept of lifelong learning through social practices and ethical behavior. | The individual could fully demonstrate practicing the concept of lifelong learning through social practices and ethical behavior. |  |
| **Total Score** | | | | | | |  |

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| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=20 | Needs improvement |
| 21-27 | Satisfactory |
| 28-34 | Partly Achieved |
| 35-40 | Fully Achieved |

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| **Behavioral Science – UG**  **Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No.:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | | |
| **Sl. No.** | **Description of Rubrics** | **UNSATISFACTORY**  **(0)** | **NEEDS IMPROVEMENT**  **(1)** | **SATISFACTORY**  **(2)** | **PROFICIENT**  **(3)** | **DISTINGUISHED**  **(4)** | **Score** |
| 1 | Able to Understand Self with reference to strength and Weakness | The JOS Does not reflect the conceptual understanding | The JOS slightly reflects the conceptual understanding | The JOS moderately reflects the conceptual understanding | The JOS mostly reflects the conceptual understanding | The JOS completely reflect the conceptual understanding |  |
| 2 | Able to display and demonstrate Self Confidence | The individual’s JOS did not cover relevant information of the application based learning | The individual’s JOS slightly covered relevant information of the application based learning | The individual’s JOS somewhat covered relevant information of the application based learning | The individual’s JOS mostly covered relevant information of the application based learning | The individual’s JOS completely covered relevant information of the application based learning |  |
| 3 | Able to apply the techniques of Impression management | The individual did not demonstrate critical thinking and analytical ability in reference techniques of Impression management | The individual did not demonstrate critical thinking and analytical ability in reference to techniques of Impression management | The individual somewhat demonstrated critical thinking and analytical ability in reference to techniques of Impression management | The individual mostly demonstrated critical thinking and analytical ability in reference to techniques of Impression management | The individual completely demonstrated critical thinking and analytical ability in reference to techniques of Impression management |  |
| 4 | Able to recognize and manage Individual Differences | The individual did not demonstrate critical thinking and analytical ability in managing Individual Differences | The individual did not demonstrate critical thinking and analytical ability in managing Individual Differences | The individual somewhat demonstrated critical thinking and analytical ability in managing Individual Differences | The individual mostly demonstrated critical thinking and analytical ability in managing Individual Differences | The individual completely demonstrated critical thinking and analytical ability in managing Individual Differences |  |
| 5 | Able to Learn and Play in Groups | The individual did not initiate and exhibit the clarity in terms of Group Dynamics | The individual slightly initiated and did exhibit the clarity in terms of better than low Group Dynamics | The individual initiated and did exhibit average on the clarity in terms Group Dynamics | The individual initiated and did exhibit moderately on demonstration of Group Dynamics | The individual effectively initiated and did exhibit average high on demonstration Group Dynamics |  |
| 6 | Able to apply creative thinking in Various situations of Problem Solving | The individual was not able to apply creative thinking in various Problem solving situation | The individual tried to apply creative thinking in various problem solving situation | The individual could somewhat apply creative thinking in various problem solving situation | The individual could moderately apply creative thinking in various problem solving situation | The individual could completely apply creative thinking in various problem solving situation |  |
| 7 | Able to demonstrate good character and value based behavior in various situations. | The individual could not demonstrate good character and value based behavior in various situations. | The individual initiated to demonstrate good character and value based behavior in various situations. | The individual could somewhat demonstrate good character and value based behavior in various situations. | The individual could moderately demonstrate good character and value based behavior in various situations. | The individual completely demonstrated good character and value based behavior in various situations. |  |
| 8 | Able to apply positive emotions for creating healthy climate. | The individual could not apply positive emotions for creating healthy climate. | The individual could slightly apply positive emotions for creating healthy climate. | The individual could somewhat apply positive emotions for creating healthy climate. | The individual could moderately apply positive emotions for creating healthy climate. | The individual could completely apply positive emotions for creating healthy climate. |  |
| 9 | Able to demonstrate the learning of excellence | The individual could not demonstrate the learning of excellence | The individual could slightly demonstrate the learning of excellence | The individual could somewhat demonstrate the learning of excellence | The individual could moderately demonstrate the learning of excellence | The individual could completely demonstrate the learning of excellence |  |
| 10 | Able to learn and practice their personal success strategies. | The individual scored low in demonstration of practicing their personal success strategies. | The individual slightly scored relatively better than low in demonstration of practicing their personal success strategies. | The individual scored average on demonstration of practicing their personal success strategies. | The individual initiated and scored moderately on demonstration of practicing their personal success strategies. | The individual effectively initiated and scored high on demonstration of practicing their personal success strategies. |  |
| 11 | Able to apply behavioral communication for effective leadership. | The individual could not apply behavioral communication for effective leadership. | The individual could initiate the application of behavioral communication for effective leadership. | The individual could slightly apply behavioral communication for effective leadership. | The individual could moderately apply behavioral communication for effective leadership. | The individual could fully apply behavioral communication for effective leadership. |  |
| 12 | Able to demonstrate value based insights to deal effectively in personal and professional life | The individual was not able to demonstrate value based insights to deal effectively in personal and professional life. | The individual could initiate the demonstration of value based insights to deal effectively in personal and professional life. | The individual could slightly demonstrate value based insights to deal effectively in personal and professional life. | The individual could moderately demonstrate value based insights to deal effectively in personal and professional life. | The individual could fully demonstrate value based insights to deal effectively in personal and professional life. |  |
| 13 | Able to manage their stress in healthy manner | The individual was not able to manage their stress in healthy manner | The individual could initiate the management of stress in a healthy manner. | The individual could slightly manage the stress in healthy manner. | The individual could moderately manage stress in a healthy manner. | The individual could completely manage stress in a healthy manner. |  |
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| --- | --- |
| **Total Score** |  |

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| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <=25 | Needs improvement |
| 26-34 | Satisfactory |
| 35-43 | Partly Achieved |
| 44-52 | Fully Achieved |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Rubrics for Assessment of Learning outcomes Behavioral Science – UG (4 year B. Tech. Programmes)**  **Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enrolment No.:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Programme:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | | |
| **Sl. No.** | **Description of Rubrics** | **UNSATISFACTORY**  **(0)** | **NEEDS IMPROVEMENT**  **(1)** | **SATISFACTORY**  **(2)** | **PROFICIENT**  **(3)** | **DISTINGUISHED**  **(4)** | **Score** |
| 1 | Able to Understand Self with reference to strength and Weakness | The JOS Does not reflect the conceptual understanding | The JOS slightly reflects the conceptual understanding | The JOS moderately reflects the conceptual understanding | The JOS mostly reflects the conceptual understanding | The JOS completely reflect the conceptual understanding |  |
| 2 | Able to display and demonstrate Self Confidence | The individual’s JOS did not cover relevant information of the application based learning | The individual’s JOS slightly covered relevant information of the application based learning | The individual’s JOS somewhat covered relevant information of the application based learning | The individual’s JOS mostly covered relevant information of the application based learning | The individual’s JOS completely covered relevant information of the application based learning |  |
| 3 | Able to apply the techniques of Impression management | The individual did not demonstrate critical thinking and analytical ability in reference techniques of Impression management | The individual slightly demonstrated critical thinking and analytical ability in reference to techniques of Impression management | The individual somewhat demonstrated critical thinking and analytical ability in reference to techniques of Impression management | The individual mostly demonstrated critical thinking and analytical ability in reference to techniques of Impression management | The individual completely demonstrated critical thinking and analytical ability in reference to techniques of Impression management |  |
| 4 | Able to recognize and manage Individual Differences | The individual was not able to recognize and manage Individual Differences | The individual was Slightly able to recognize and manage Individual Differences | The individual was somewhat able to recognize and manage Individual Differences | The individual was moderately able to recognize and manage Individual Differences | The individual was completely able to recognize and manage Individual Differences |  |
| 5 | Able to Learn and Play in Groups | The individual did not initiate and exhibit clarity in terms of Group Dynamics | The individual slightly exhibited clarity in terms of demonstrating Group Dynamics | The individual initiated and exhibited somewhat Group Dynamics | The individual initiated and moderately exhibited Group Dynamics | The individual effectively initiated and completely exhibited Group Dynamics |  |
| 6 | Able to apply creative thinking in Various situations of Problem Solving | The individual was not able to apply creative thinking in various Problem solving situation | The individual tried to apply creative thinking in various problem solving situation | The individual could somewhat apply creative thinking in various problem solving situation | The individual could moderately apply creative thinking in various problem solving situation | The individual could completely apply creative thinking in various problem solving situation |  |
| 7 | Able to demonstrate good character and value based behavior in various situations. | The individual could not demonstrate good character and value based behavior in various situations. | The individual initiated to demonstrate good character and value based behavior in various situations. | The individual could somewhat demonstrate good character and value based behavior in various situations. | The individual could moderately demonstrate good character and value based behavior in various situations. | The individual completely demonstrated good character and value based behavior in various situations. |  |
|  | Able to apply positive emotions for creating healthy climate. | The individual could not apply positive emotions for creating healthy climate. | The individual could slightly apply positive emotions for creating healthy climate. | The individual could somewhat apply positive emotions for creating healthy climate. | The individual could moderately apply positive emotions for creating healthy climate. | The individual could completely apply positive emotions for creating healthy climate. |  |
| 9 | Able to demonstrate the learning of excellence | The individual could not demonstrate the learning of excellence | The individual could slightly demonstrate the learning of excellence | The individual could somewhat demonstrate the learning of excellence | The individual could moderately demonstrate the learning of excellence | The individual could completely demonstrate the learning of excellence |  |
| 10 | Able to learn and practice their personal success strategies. | The individual scored low in demonstration of practicing their personal success strategies. | The individual slightly scored relatively better than low in demonstration of practicing their personal success strategies. | The individual scored average on demonstration of practicing their personal success strategies. | The individual initiated and scored moderately on demonstration of practicing their personal success strategies. | The individual effectively initiated and scored high on demonstration of practicing their personal success strategies. |  |
| 11 | Able to apply behavioral communication for effective leadership. | The individual could not apply behavioral communication for effective leadership. | The individual could initiate the application of behavioral communication for effective leadership. | The individual could somewhat apply behavioral communication for effective leadership. | The individual could moderately apply behavioral communication for effective leadership. | The individual could fully apply behavioral communication for effective leadership. |  |
| 12 | Able to demonstrate value based insights to deal effectively in personal and professional life | The individual was not able to demonstrate value based insights to deal effectively in personal and professional life. | The individual could initiate the demonstration of value based insights to deal effectively in personal and professional life. | The individual could somewhat demonstrate value based insights to deal effectively in personal and professional life. | The individual could moderately demonstrate value based insights to deal effectively in personal and professional life. | The individual could fully demonstrate value based insights to deal effectively in personal and professional life. |  |
| 13 | Able to manage their stress in healthy manner. | The individual was not able to manage their stress in healthy manner. | The individual could slightly initiate the management of stress in a healthy manner. | The individual could somewhat manage the stress in healthy manner. | The individual could moderately manage stress in a healthy manner. | The individual could completely manage stress in a healthy manner. |  |
|  |  |  |  |  |  |  |  |
| 14 | Able to coordinate and Empower Team | The individual was not able to coordinate and Empower Team | The individual was able to initiate the coordination and Empower Team | The individual was able to somewhat coordinate and Empower Team | The individual was able to moderately coordinate and Empower Team | The individual was completely able to coordinate and Empower Team |  |
| **Total Score** | | | | | | |  |

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
| <28 | Needs improvement |
| 28-37 | Satisfactory |
| 38-46 | Partly Achieved |
| 47-56 | Fully Achieved |

**RUBRICS FOR ASSESMENT OF FOREIGN BUSINESS LANGUAGE FOR \_\_\_\_\_\_\_\_\_\_\_\_ PROGRAMME**

**Assessment Parameters:**

1. Language
2. Culture
3. Vocabulary

**SCORING:**

* If the student’s performance is **unsatisfactory** on a criteria then he scores 0
* If the student’s performance is **needs improvement** on a criteria then he scores 1
* If the student’s performance is **satisfactory** on a criteria then he scores 2
* If the student’s performance is **proficient** on a criteria then he scores 3
* If the student’s performance is **distinguished** on a criteria then he scores 4

**TOOLS USED FOR ASSESSMENT:**

* Role play
* Exercises in class
* Class performance
* Assignments

**COMPOSITION OF ASSESSMENT BOARD**

* Foreign Business Language Faculty
* Program coordinator
* Senior Core Course Faculty

Rubrics for Foreign Business Languages – 2 Years PG Programmes

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Attributes** | **Unsatisfactory (0)** | **Needs improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** |
| 1 | Introduction to language & Culture Greetings & Basic Vocabulary | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |
| 2 | Description of people and locations | Uses limited vocabulary and mispronunciations impede comprehensibility. | Relies on basic vocabulary. Speech is comprehensible in spite of mispronunciation. | Utilizes old and new vocabulary. Attempts to use idiomatic expressions according to the topic. | Speaks clearly and uses idiomatic expressions fluently as per the topic. | Uses variety of vocabulary as per the context. Has good command over expressions. |
| 3 | Regular & Irregular verbs | Makes sentences which are so brief that there is little evidence of structure & comprehension. | Makes errors which may interfere with comprehensibility. | Makes a few errors which do not affect the overall comprehension. | Uses correct word order and article adjectives. Errors do not hinder comprehensibility. | Makes error free sentences using correct sentence formations. |
| 4 | Describing self, Possessions & places | Uses very few approaches to initiate a conversation. | Uses some strategies and needs frequent prompting to further the conversation. | Uses some strategies yet requires occasional prompting. | Clarifies and continues conversation using good strategies like intonation, self-correction, and verbal cues. | Is able to speak on any given topic using expressions. Is also able to comprehend other person clearly. |
| 5 | Likes & Dislikes | Rarely uses/interprets cultural manifestations. | Sometimes uses/interprets cultural manifestations when appropriate to the task. | Frequently uses/interprets cultural manifestations when appropriate to the task. | Almost always uses /interprets cultural manifestations when appropriate to the task. | Has in-depth knowledge about other countries culture & other perspectives. |
| 6 | On-going actions & plans | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |
| 7 | Recent past situations | Makes sentences which are so brief that there is little evidence of structure & comprehension. | Makes errors which may interfere with comprehensibility. | Makes a few errors which do not affect the overall comprehension. | Uses correct word order and article adjectives. Errors do not hinder comprehensibility. | Makes error free sentences using correct sentence formations. |
| 8 | Expressing emotions, dialogues used at public places | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |

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| **If the student scores between** | **Outcome Attainment Levels** |
|  |  |
| 50% | Needs improvement |
| 51%-60% | Satisfactory |
| 61%-70% | Partly Achieved |
| 71%-100% | Fully Achieved |

**RUBRICS FOR ASSESMENT OF FOREIGN BUSINESS LANGUAGE FOR \_\_\_\_\_\_\_\_\_\_\_\_ PROGRAMME**

**Assessment Parameters:**

1. Language
2. Culture
3. Vocabulary

**SCORING:**

* If the student’s performance is **unsatisfactory** on a criteria then he scores 0
* If the student’s performance is **needs improvement** on a criteria then he scores 1
* If the student’s performance is **satisfactory** on a criteria then he scores 2
* If the student’s performance is **proficient** on a criteria then he scores 3
* If the student’s performance is **distinguished** on a criteria then he scores 4

**TOOLS USED FOR ASSESSMENT:**

* Role play
* Exercises in class
* Class performance
* Assignments

**COMPOSITION OF ASSESSMENT BOARD**

* Foreign Business Language Faculty
* Program coordinator
* Senior Core Course Faculty

Rubrics for Foreign Business Languages – 3 Years UG Programmes

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Attributes** | **Unsatisfactory (0)** | **Needs improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** |
| 1 | Introduction to language & Culture Greetings & Basic Vocabulary | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |
| 2 | Description of people and locations | Uses limited vocabulary and mispronunciations impede comprehensibility. | Relies on basic vocabulary. Speech is comprehensible in spite of mispronunciation. | Utilizes old and new vocabulary. Attempts to use idiomatic expressions according to the topic. | Speaks clearly and uses idiomatic expressions fluently as per the topic. | Uses variety of vocabulary as per the context. Has good command over expressions. |
| 3 | Regular & Irregular verbs | Makes sentences which are so brief that there is little evidence of structure & comprehension. | Makes errors which may interfere with comprehensibility. | Makes a few errors which do not affect the overall comprehension. | Uses correct word order and article adjectives. Errors do not hinder comprehensibility. | Makes error free sentences using correct sentence formations. |
| 4 | Describing self, Possessions & places | Uses very few approaches to initiate a conversation. | Uses some strategies and needs frequent prompting to further the conversation. | Uses some strategies yet requires occasional prompting. | Clarifies and continues conversation using good strategies like intonation, self-correction, and verbal cues. | Is able to speak on any given topic using expressions. Is also able to comprehend other person clearly. |
| 5 | Likes & Dislikes | Rarely uses/interprets cultural manifestations. | Sometimes uses/interprets cultural manifestations when appropriate to the task. | Frequently uses/interprets cultural manifestations when appropriate to the task. | Almost always uses /interprets cultural manifestations when appropriate to the task. | Has in-depth knowledge about other countries culture & other perspectives. |
| 6 | On-going actions & plans | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |
| 7 | Recent past situations | Makes sentences which are so brief that there is little evidence of structure & comprehension. | Makes errors which may interfere with comprehensibility. | Makes a few errors which do not affect the overall comprehension. | Uses correct word order and article adjectives. Errors do not hinder comprehensibility. | Makes error free sentences using correct sentence formations. |
| 8 | Expressing emotions, dialogues used at public places | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |
| 9 | Conversation in future tense | Makes sentences which are so brief that there is little evidence of structure & comprehension. | Makes errors which may interfere with comprehensibility. | Makes a few errors which do not affect the overall comprehension. | Uses correct word order and article adjectives. Errors do not hinder comprehensibility. | Makes error free sentences using correct sentence formations. |
| 10 | Informal letters & emails | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |
| 11 | Orders and Instructions | Makes sentences which are so brief that there is little evidence of structure & comprehension. | Makes errors which may interfere with comprehensibility. | Makes a few errors which do not affect the overall comprehension. | Uses correct word order and article adjectives. Errors do not hinder comprehensibility. | Makes error free sentences using correct sentence formations. |
| 12 | Request and Enquiry | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
|  |  |
| 50% | Needs improvement |
| 51%-60% | Satisfactory |
| 61%-70% | Partly Achieved |
| 71%-100% | Fully Achieved |

**RUBRICS FOR ASSESMENT OF FOREIGN BUSINESS LANGUAGE FOR \_\_\_\_\_\_\_\_\_\_\_\_ PROGRAMME**

**Assessment Parameters:**

1. Language
2. Culture
3. Vocabulary

**SCORING:**

* If the student’s performance is **unsatisfactory** on a criteria then he scores 0
* If the student’s performance is **needs improvement** on a criteria then he scores 1
* If the student’s performance is **satisfactory** on a criteria then he scores 2
* If the student’s performance is **proficient** on a criteria then he scores 3
* If the student’s performance is **distinguished** on a criteria then he scores 4

**TOOLS USED FOR ASSESSMENT:**

* Role play
* Exercises in class
* Class performance
* Assignments

**COMPOSITION OF ASSESSMENT BOARD**

* Foreign Business Language Faculty
* Program coordinator
* Senior Core Course Faculty

Rubrics for Foreign Business Languages – 4 Years UG Programmes

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Attributes** | **Unsatisfactory (0)** | **Needs improvement (1)** | **Satisfactory (2)** | **Proficient (3)** | **Distinguished (4)** |
| 1 | Introduction to language & Culture Greetings & Basic Vocabulary | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |
| 2 | Description of people and locations | Uses limited vocabulary and mispronunciations impede comprehensibility. | Relies on basic vocabulary. Speech is comprehensible in spite of mispronunciation. | Utilizes old and new vocabulary. Attempts to use idiomatic expressions according to the topic. | Speaks clearly and uses idiomatic expressions fluently as per the topic. | Uses variety of vocabulary as per the context. Has good command over expressions. |
| 3 | Regular & Irregular verbs | Makes sentences which are so brief that there is little evidence of structure & comprehension. | Makes errors which may interfere with comprehensibility. | Makes a few errors which do not affect the overall comprehension. | Uses correct word order and article adjectives. Errors do not hinder comprehensibility. | Makes error free sentences using correct sentence formations. |
| 4 | Describing self, Possessions & places | Uses very few approaches to initiate a conversation. | Uses some strategies and needs frequent prompting to further the conversation. | Uses some strategies yet requires occasional prompting. | Clarifies and continues conversation using good strategies like intonation, self-correction, and verbal cues. | Is able to speak on any given topic using expressions. Is also able to comprehend other person clearly. |
| 5 | Likes & Dislikes | Rarely uses/interprets cultural manifestations. | Sometimes uses/interprets cultural manifestations when appropriate to the task. | Frequently uses/interprets cultural manifestations when appropriate to the task. | Almost always uses /interprets cultural manifestations when appropriate to the task. | Has in-depth knowledge about other countries culture & other perspectives. |
| 6 | On-going actions & plans | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |
| 7 | Recent past situations | Makes sentences which are so brief that there is little evidence of structure & comprehension. | Makes errors which may interfere with comprehensibility. | Makes a few errors which do not affect the overall comprehension. | Uses correct word order and article adjectives. Errors do not hinder comprehensibility. | Makes error free sentences using correct sentence formations. |
| 8 | Expressing emotions, dialogues used at public places | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |
| 9 | Conversation in future tense | Makes sentences which are so brief that there is little evidence of structure & comprehension. | Makes errors which may interfere with comprehensibility. | Makes a few errors which do not affect the overall comprehension. | Uses correct word order and article adjectives. Errors do not hinder comprehensibility. | Makes error free sentences using correct sentence formations. |
| 10 | Informal letters & emails | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |
| 11 | Orders and Instructions | Makes sentences which are so brief that there is little evidence of structure & comprehension. | Makes errors which may interfere with comprehensibility. | Makes a few errors which do not affect the overall comprehension. | Uses correct word order and article adjectives. Errors do not hinder comprehensibility. | Makes error free sentences using correct sentence formations. |
| 12 | Request and Enquiry | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |
| 13 | Telephonic Conversations | Makes sentences which are so brief that there is little evidence of structure & comprehension. | Makes errors which may interfere with comprehensibility. | Makes a few errors which do not affect the overall comprehension. | Uses correct word order and article adjectives. Errors do not hinder comprehensibility. | Makes error free sentences using correct sentence formations. |
| 14 | Conversation & describing past events. | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |
| 15 | Interview skills | Makes sentences which are so brief that there is little evidence of structure & comprehension. | Makes errors which may interfere with comprehensibility. | Makes a few errors which do not affect the overall comprehension. | Uses correct word order and article adjectives. Errors do not hinder comprehensibility. | Makes error free sentences using correct sentence formations. |
| 16 | Story reading and comprehension | Student does not understand the concepts. | Sometimes takes initiative & asks questions. | Is able to comprehend and utilize appropriate study material. | Student eagerly participates in class. Asks questions and speaks spontaneously. | Student shows great interest in class activities & instantly responds with the right answer. |

|  |  |
| --- | --- |
| **If the student scores between** | **Outcome Attainment Levels** |
|  |  |
| 50% | Needs improvement |
| 51%-60% | Satisfactory |
| 61%-70% | Partly Achieved |
| 71%-100% | Fully Achieved |

**STUDENT EXIT SURVEY**

**Student Exit Survey**

**Programme: B. Tech Biotechnology Batch \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Dear Student, the objective of this Survey is to seek your candid assessment regarding the various learning aspects of the programme. The information from this survey will be analysed and used to identify the areas of improvement.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Statements** | **Strongly agree** | **Agree** | **Neither agree nor disagree** | **Somewhat Agree** | **Not at all agree** |
| **PLO 1 : Knowledge and skills in Biotechnology** | | | | | | |
| 1 | I have developed clear understanding about Biotechnology |  |  |  |  |  |
| 2 | I have acquired basic skills in biotechnology. |  |  |  |  |  |
| 3 | I am able to apply academic learning to practical issues. |  |  |  |  |  |
| 4 | I am able to use the acquired skills in various areas of biotechnology. |  |  |  |  |  |
| **PLO 2: Problem solving** | | | | | | |
| 1 | I am able to identify the problem in specific area of biotechnology. |  |  |  |  |  |
| 2 | I have the ability to practically solve the problem in biotechnology |  |  |  |  |  |
| 3 | I have ability to understand research problems |  |  |  |  |  |
| 4 | I am able to analyse data/information and interpret results for driving optimum solutions. |  |  |  |  |  |
| **PLO 3 : Concepts in biotechnological techniques** | | | | | | |
| 1 | I have learned and acquired the basic concepts and learning of biotechnological skills |  |  |  |  |  |
| 2 | I am able to analyse and apply the concepts in biotechnological techniques to come to conclusion |  |  |  |  |  |
| 3 | I am able to implement the skills learned in research and development |  |  |  |  |  |
| 4 | I have acquired the clear concepts in various techniques of biotechnology |  |  |  |  |  |
| **PLO 4 : Communication Skills** | | | | | | |
| 1 | I can communicate clearly and effectively with my team members. |  |  |  |  |  |
| 2 | I can deliver effective presentations |  |  |  |  |  |
| 3 | I have ability to speak proficiently. |  |  |  |  |  |
| 4 | I have ability to write effectively and clearly. |  |  |  |  |  |
| **PLO 5:Interpersonal skills** | |  |  |  |  |  |
| 1 | I am able to collect and design relevant information. |  |  |  |  |  |
| 2 | I have acquired adequate skills to present the information to my coworkers in effective manner. |  |  |  |  |  |
| 3 | I am able to organise information and disseminate it effectively |  |  |  |  |  |
| 4 | I have learned to present the information to R&D companies. |  |  |  |  |  |
| **PLO 6: Behavioural skills** | |  |  |  |  |  |
| 1 | I have acquired sufficient behavioural skills like convincing and analytical thinking. |  |  |  |  |  |
| 2 | I have learned behavioural skills like answering a complaint etc. |  |  |  |  |  |
| 3 | I am able to apply the various behavioural skills to be successful at workplace |  |  |  |  |  |
| 4 | I am able to lead my professional life efficiently with these behavioural skills |  |  |  |  |  |
| **PLO 7 : Self-management and teamwork** | | | | | | |
| 1 | I am reliable. |  |  |  |  |  |
| 2 | I am dependable. |  |  |  |  |  |
| 3 | I am able to communicate effectively in interdisciplinary teams. |  |  |  |  |  |
| 4 | I am able to work effectively in interdisciplinary teams. |  |  |  |  |  |
| **PLO 8 : Recognition of novel ideas in Biotechnology** | | | | | | |
| 1 | I am able to recognise novel ideas in biotechnology |  |  |  |  |  |
| 2 | I am capable of applying knowledge and skills in biotechnology. |  |  |  |  |  |
| 3 | I am able to understand it from different perspectives. |  |  |  |  |  |
| 4 | I am capable to develop the novel idea for the betterment of the society. |  |  |  |  |  |
| **PLO 9 : Bio-Ethical Practice and Social Responsibility** | | | | | | |
| 1 | I understand the highest standards of ethical behaviour. |  |  |  |  |  |
| 2 | I am ethically responsible towards colleagues and research subjects. |  |  |  |  |  |
| 3 | I practice the highest standards of ethical behaviour associated with my profession. |  |  |  |  |  |
| 4 | I have bio-ethical responsiblity towards the wider community, and the environment. |  |  |  |  |  |
| **PLO 10 : Employability skills** | | | | | | |
| 1 | I have employability skills in biotechnology |  |  |  |  |  |
| 2 | I have advanced learning in developing business and employment skills |  |  |  |  |  |
| 3 | I possess entrepreneur skill |  |  |  |  |  |
| 4 | I possess intellectual business skills |  |  |  |  |  |
| **PLO 11**: **Environmental sensitivity** | |  |  |  |  |  |
| 1 | I am sensitive towards the environment. |  |  |  |  |  |
| 2 | I strive to develop environmentally sustainable technologies |  |  |  |  |  |
| 3 | I understand the need to preserve and conserve the environment. |  |  |  |  |  |
| 4 | I have skills to understand the pros and cons of biotechnological advancement on environment and surroundings. |  |  |  |  |  |
| **PLO 12: Lifelong Learning** | | | | | | |
| 1 | I am a curious learner. |  |  |  |  |  |
| 2 | I have the ability to acquire knowledge. |  |  |  |  |  |
| 3 | I can apply the learned skills to set my profession |  |  |  |  |  |
| 4 | I have the ability to acquire information on my own via various sources. |  |  |  |  |  |
| **Experience at AMITY** | | | | | | |
| 1 | I am overall satisfied with the methodologies and pedagogical tools used by my faculty. |  |  |  |  |  |
| 2 | I find the curriculum contemporary and relevant to the industry. |  |  |  |  |  |
| 3 | I got ample opportunities for Industry Interaction. |  |  |  |  |  |
| 4 | I am satisfied with the Internship facility provided to me. |  |  |  |  |  |
| 5 | I am satisfied with the University Infrastructure. |  |  |  |  |  |
| 6 | I am overall satisfied with the Faculties who taught me. |  |  |  |  |  |
| 7 | I am overall satisfied with the Programme. |  |  |  |  |  |

Thank you for taking the time to complete this survey.

**Student Exit Survey**

**Programme - B Sc. (Honours) Biotechnology Batch \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Dear Student, the objective of this Survey is to seek your candid assessment regarding the various learning aspects of the programme. The information from this survey will be analysed and used to identify the areas of improvement.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Statements** | **Strongly agree** | **Agree** | **Neither agree nor disagree** | **Somewhat Agree** | **Not at all agree** |
| **PLO 1 : Ethical issues associated with Biotechnology research** | | | | | | |
| 1 | I understand the ethical issues related to research and knowledge in biotechnology. |  |  |  |  |  |
| 2 | I strive for honesty and responsibility towards the environment and the knowledge we gain so as to put it to best use. |  |  |  |  |  |
| 3 | I am ethical responsible towards colleagues, research subjects, the wider community, and the environment; |  |  |  |  |  |
| 4 | I strive for justice, equality, honesty, and integrity in all my personal and professional pursuits |  |  |  |  |  |
| **PLO 2: Team work Leadership and Behavioural Skills** | | | | | | |
| 1 | I have developed in the program to be reliable and dependable. |  |  |  |  |  |
| 2 | I am Respectful & Empathetic towards others views irrespective of caste, race, class, gender, religion etc. |  |  |  |  |  |
| 3 | I have learnt skills to complete assignments and projects on time. |  |  |  |  |  |
| 4 | I am confident and have learnt how to adapt to change |  |  |  |  |  |
| **PLO 3 : Learning attitude** | | | | | | |
| 1 | I have intellectual curiosity towards learning the various processes of life sciences. |  |  |  |  |  |
| 2 | I am competent to use a range of learning strategies and acquire knowledge on my own through various sources. |  |  |  |  |  |
| 3 | I feel I am a self-directed learner who continues to learn and grow. |  |  |  |  |  |
| 4 | I use my prior learning to approach a new problem. |  |  |  |  |  |
| **PLO 4 : Environment sensitivity** | | | | | | |
| 1 | I understand the need for conservation of environment |  |  |  |  |  |
| 2 | I recognize the relationship between Environmental, Social and economic sustainability and my role towards it. |  |  |  |  |  |
| 3 | I apply my knowledge in a diverse range of contexts pertaining to Environmental, Social and economic sustainability. |  |  |  |  |  |
| 4 | I strive to develop environmentally sustainable technologies |  |  |  |  |  |
| **PLO 5 : Biotechnology applications** | | | | | | |
| 1 | I am competent of identifying the highly specialized concepts in theoretical and applied aspects of Biotechnology. |  |  |  |  |  |
| 2 | I have developed the attitude of review and critically appraise the practical aspects of biotechnology. |  |  |  |  |  |
| 3 | I try to relate academic learning to practical issues. |  |  |  |  |  |
| 4 | I have ability to develop creative, innovative and practical solution. |  |  |  |  |  |
| **PLO 6 : Knowledge of Biosciences and Biotechnology** | | | | | | |
| 1 | I have developed the basic understanding towards fundamental and relevant questions in lifescience |  |  |  |  |  |
| 2 | I am able to understand modern biotechnology in a synergistic framework. |  |  |  |  |  |
| 3 | I am able to apply concepts of Biosciences and Biotechnology in multi-disciplinary context. |  |  |  |  |  |
| 4 | I have developed curiosity to learn new things and grow in terms of knowledge. |  |  |  |  |  |
| **PLO 7 : Critical and analytical skills and problem solving** | | | | | | |
| 1 | I am able to describe and critically analyse problems in Biosciences & Biotechnology in a research or industrial environment. |  |  |  |  |  |
| 2 | I try to relate academic learning to practical issues. |  |  |  |  |  |
| 3 | I have ability to develop creative, innovative and practical solution and to prioritize my work. |  |  |  |  |  |
| 4 | I have ability to implement and test solutions. |  |  |  |  |  |
| **PLO 8 : Good lab practices** | | | | | | |
| 1 | I am well equipped with most of the practical skills related to basic biotechnology. |  |  |  |  |  |
| 2 | I have developed and an awareness of good lab practice in biotechnology |  |  |  |  |  |
| 3 | I am aware of the safety issues related to environment and health . |  |  |  |  |  |
| 4 | I am able to apply practical techniques in a way so as to ensure health and safety. |  |  |  |  |  |
| **PLO 9: Biological Data analysis and interpretation** | | | | | | |
| 1 | I am able to critical analyse data/information |  |  |  |  |  |
| 2 | I am able to interpret results for driving optimum solutions. |  |  |  |  |  |
| 3 | I am able to use various tools and technologies for data processing and analysis. |  |  |  |  |  |
| 4 | I am able to review and systematically interpret information |  |  |  |  |  |
| **PLO 10: Oral and written Communication Skills** | | | | | | |
| 1 | I have ability to effectively communicate and impart knowledge which I have acquired on the topics of biosciences and biotechnology |  |  |  |  |  |
| 2 | I am competent to analyse and convey information in writing. |  |  |  |  |  |
| 3 | I can Communicate clearly and effectively pertaining to the topics of life sciences. |  |  |  |  |  |
| 4 | I am good making presentation in global /cross cultural environment. |  |  |  |  |  |
| **PLO 11: Interpersonal skills** | |  |  |  |  |  |
| 1 | I have grown to be self-managed. |  |  |  |  |  |
| 2 | I am quite responsible and accountable. |  |  |  |  |  |
| 3 | I am a socially aware person with skills of problem solving |  |  |  |  |  |
| 4 | I am able to effectively communicate in a group as well as individual basis. |  |  |  |  |  |
| **PLO 12: Practical Skills in Biotechnology** | |  |  |  |  |  |
| 1 | I am competent of using all the basic tools and techniques in basic biotechnology. |  |  |  |  |  |
| 2 | I am aware of resources and tools to be used in understanding the basics of biotechnology research. |  |  |  |  |  |
| 3 | I am capable of the efficient use of resources and tools. |  |  |  |  |  |
| 4 | I am aware of good lab practices to ensure health and safety. |  |  |  |  |  |
| **Experience at AMITY** | | | | | | |
| 1 | I am overall satisfied with the methodologies and pedagogical tools used by my faculty. |  |  |  |  |  |
| 2 | I find the curriculum contemporary and relevant to the industry. |  |  |  |  |  |
| 3 | I got ample opportunities for Industry Interaction. |  |  |  |  |  |
| 4 | I am satisfied with the Internship facility provided to me. |  |  |  |  |  |
| 5 | I am satisfied with the University Infrastructure. |  |  |  |  |  |
| 6 | I am overall satisfied with the Faculties who taught me. |  |  |  |  |  |
| 7 | I am overall satisfied with the Programme. |  |  |  |  |  |

Thank you for taking the time to complete this survey.

**Student Exit Survey**

**Programme - B. Tech. Bioinformatics Batch \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Dear Student, the objective of this Survey is to seek your candid assessment regarding the various learning aspects of the programme. The information from this survey will be analysed and used to identify the areas of improvement.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Statements** | **Strongly agree** | **Agree** | **Neither agree nor disagree** | | **Somewhat Agree** | **Not at all agree** |
| **PLO 1 : Knowledge of Bioinformatics and Computational Biotechnology** | | | | | | | |
| 1 | I am able to define, summarize concepts in Bioinformatics & Computational Biotechnology |  |  | |  |  |  |
| 2 | I am able to apply concepts of Bioinformatics & Computational Biotechnology in multi-disciplinary context. |  |  | |  |  |  |
| 3 | I am able to understand Bioinformatics & Computational Biotechnology in a synergistic framework. |  |  | |  |  |  |
| 4 | I have developed curiosity to learn new things and grow in terms of knowledge. |  |  | |  |  |  |
| **PLO 2: Problem solving** | | | | | | | |
| 1 | I am able to describe and analyse problems in Bioinformatics & Computational Biotechnology in a research or industrial environment. |  |  |  | |  |  |
| 2 | I try to relate academic learning to practical issues. |  |  |  | |  |  |
| 3 | I have ability to develop innovative and practical solution. |  |  |  | |  |  |
| 4 | I have ability to implement and test solutions. |  |  |  | |  |  |
| **PLO 3 : Computational Algorithm development** | | | | | | | |
| 1 | I have ability to formulate multidisciplinary research and interface between modern biology & informatics. |  |  |  | |  |  |
| 2 | I am able to review and systematically develop computational algorithm and databases. |  |  |  | |  |  |
| 3 | I am aware of resources and tools to be used to develop computational algorithm and databases. |  |  |  | |  |  |
| 4 | I am capable of the efficient use of resources and tools. |  |  |  | |  |  |
| **PLO4:** | **Scientific Reading & Learning** |  |  |  | |  |  |
| 1 | I have quest for scientific reading which promotes knowledge |  |  |  | |  |  |
| 2 | I have developed learning attitude to gain knowledge from the fields of computer science, biology, and mathematics that are critical for students considering bioinformatics research. |  |  |  | |  |  |
| 3 | I have developed programming knowledge and general computer skills which are essential for success in bioinformatics research projects. |  |  |  | |  |  |
| 4 | I have the ability to use the knowledge efficiently in bioinformatics research projects. |  |  |  | |  |  |
| **PLO 5 : Communication Skills** | | | | | | | |
| 1 | I have ability to speak proficiently. |  |  |  | |  |  |
| 2 | I am competent to convey information in writing. |  |  |  | |  |  |
| 3 | I can communicate clearly and effectively. |  |  |  | |  |  |
| 4 | I think, I am quite a good listener in professional business setting. |  |  |  | |  |  |
| 5 | I am good making presentation in global /cross cultural environment. |  |  |  | |  |  |
| **PLO 6 : Team work Leadership and Behavioural Skills** | | | | | | | |
| 1 | I am reliable and dependable. |  |  |  | |  |  |
| 2 | I am Respectful & Empathetic towards others views irrespective of caste, race, class, gender, religion etc. |  |  |  | |  |  |
| 3 | I am a collaborative team worker. |  |  |  | |  |  |
| 4 | I can stay calm in crisis situations and motivate my team. |  |  |  | |  |  |
| 5 | I am confident to initiate and lead my peer group in any situation. |  |  |  | |  |  |
| **PLO7:** | **Theoretical & Practical Learning** |  |  |  | |  |  |
| 1 | I can easily apply my concepts of theoretical bioinformatics knowledge in practical contexts. |  |  |  | |  |  |
| 2 | I have better understanding towards working on biological workbench for better data analysis and information processing. |  |  |  | |  |  |
| 3 | I am able to use various tools and technologies for data processing and analysis. |  |  |  | |  |  |
| 4 | I am able to critically analyze data/information interpret results for driving optimum solutions. |  |  |  | |  |  |
|  | | | | | | | |
| **PLO8:** | **Ethical and Professional Conduct** |  |  |  | |  |  |
| 1 | I understand and practice the highest standards of ethical behaviour associated with management profession. |  |  |  | |  |  |
| 2 | I am ethical responsible towards colleagues, research subjects, the wider community, and the environment; |  |  |  | |  |  |
| 3 | I strive for justice, equality, honesty, and integrity in all my personal and professional pursuits. |  |  |  | |  |  |
| 4 | I understand the ethical issues related to research and knowledge in bioinformatics. |  |  |  | |  |  |
|  | | | | | | | |
| **PLO9:** | **Employability Entrepreneurship Skill** |  |  |  | |  |  |
| 1 | I have basic business acumen & business skills to be employable. |  |  |  | |  |  |
| 2 | I can create visibility for myself to draw attention of a recruiter. |  |  |  | |  |  |
| 3 | I possess entrepreneur skill; I am a risk taker. |  |  |  | |  |  |
| 4 | I always find opportunities to improve the business value chain. |  |  |  | |  |  |
|  | | | | | | | |
| **PLO10:** | **Analytical skills** |  |  |  | |  |  |
| 1 | I am able to analyse biological data/information and interpret results for driving optimum solutions. |  |  |  | |  |  |
| 2 | I have developed analytical skills which are beneficial beyond the scoop of books through the didactic phase of the program. |  |  |  | |  |  |
| 3 | I try to relate academic learning to practical issues. |  |  |  | |  |  |
| 4 | I have ability to develop creative, innovative and practical solution and to implement and test solutions |  |  |  | |  |  |
|  | | | | | | | |
| **PLO 11**: **Environment sensitivity** | | | | | | | |
| 1 | I understand the need for conservation of environment | |  |  | |  |  |
| 2 | I strive to develop environmentally sustainable technologies | |  |  | |  |  |
| 3 | I recognize the relationship between Environmental, Social and economic sustainability and my role towards it. | |  |  | |  |  |
| 4 | I apply my knowledge in a diverse range of contexts pertaining to Environmental, Social and economic sustainability. | |  |  | |  |  |
|  | | | | | | | |
| **PLO 12: Lifelong Learning** | | | | | | | |
| 1 | I have curiosity to learn new things. |  |  |  | |  |  |
| 2 | I am competent to acquire knowledge on my own through various sources. |  |  |  | |  |  |
| 3 | I feel I am a self-directed learner. |  |  |  | |  |  |
| 4 | Translate the scientific finding for the benefit of the society. |  |  |  | |  |  |
|  | | | | | | | |
| **Experience at AMITY** | | | | | | | |
| 1 | I am overall satisfied with the methodologies and pedagogical tools used by my faculty. |  |  |  | |  |  |
| 2 | I find the curriculum contemporary and relevant to the industry. |  |  |  | |  |  |
| 3 | I got ample opportunities for Industry Interaction. |  |  |  | |  |  |
| 4 | I am satisfied with the Internship facility provided to me. |  |  |  | |  |  |
| 5 | I am satisfied with the University Infrastructure. |  |  |  | |  |  |
| 6 | I am overall satisfied with the Faculties who taught me. |  |  |  | |  |  |
| 7 | I am overall satisfied with the Programme. |  |  |  | |  |  |

Thank you for taking the time to complete this survey.

**Student Exit Survey**

**Programme Group : B. Sc. (Hons) Medical Biotechnology**

Dear Student, the objective of this Survey is to seek your candid assessment regarding the various learning aspects of the B.Sc (Hons) Medical Biotechnology programme. The information from this survey will be analysed and used to identify the areas of improvement.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Statements** | **Strongly agree** | **Agree** | **Neither agree nor disagree** | **Somewhat Agree** | **Not at all agree** |
| **PLO 1 : Knowledge of Medical Biotechnology** | | | | | | |
| 1 | I can summarize the basic understanding towards fundamental and relevant questions in lifescience and medical biotechnology in a synergistic framework. |  |  |  |  |  |
| 2 | I am able to explain and analyse the concept of medical biotechnology in context to healthcare. |  |  |  |  |  |
| 3 | I can translate academic learning to practical issues. |  |  |  |  |  |
| 4 | I am able to apply the acquired skills in various areas of biotechnology. |  |  |  |  |  |
| **PLO 2: Analytical skills** | | | | | | |
| 1 | I am able to describe and outline the problems in Biosciences and medical biotechnology in a research environment. |  |  |  |  |  |
| 2 | I can translate academic learning to practical issues and I am able to identify problems and prepare small projects for the analysis of the same. |  |  |  |  |  |
| 3 | I am able to reach sustained conclusions of the problems related to medical biotechnology using logical principles. |  |  |  |  |  |
| 4 | I am able to translate data/information and interpret results for driving optimum solutions. |  |  |  |  |  |
| **PLO3 : Problem Solving** | | | | | | |
| 1 | I have developed skills to solve the problems in medical biotechnology |  |  |  |  |  |
| 2 | I am able to list the skills to plan a diverse range of medical biotechnology divisions. |  |  |  |  |  |
| 3 | I am able to describe practical solutions within medical biotechnology area. |  |  |  |  |  |
| 4 | I can apply various decision making methods to scientifically solve any medical biotechnology problem. |  |  |  |  |  |
| **PLO 4 : Data analysis and interpretation** | | | | | | |
| 1 | I am able to use knowledge and scientifically proven methodologies to demonstrate basic medical biotechnology experiments |  |  |  |  |  |
| 2 | I am able to produce data to provide meaningful definitive conclusions. |  |  |  |  |  |
| 3 | I am able to solve research problem in medical biotechnology |  |  |  |  |  |
| 4 | I am able to produce results to basic problems in medical biotechnology area |  |  |  |  |  |
| **PLO 5 : Individual and team work** | | | | | | |
| 1 | I am reliable and dependable. |  |  |  |  |  |
| 2 | I am confident to initiate and lead my peer group in any situation. |  |  |  |  |  |
| 3 | I have developed in the program to be reliable and dependable. |  |  |  |  |  |
| 4 | I can complete assignments and projects on time. |  |  |  |  |  |
| **PLO 6 : Communication Skills** | | | | | | |
| 1 | I have ability to effectively communicate and impart knowledge which I have acquired on the topics of basic medical biotechnology |  |  |  |  |  |
| 2 | I can communicate clearly and effectively pertaining to the topics of life sciences. |  |  |  |  |  |
| 3 | I have ability to speak proficiently |  |  |  |  |  |
| 4 | I have ability to write clearly. |  |  |  |  |  |
| **PLO 7 : Ethical and Professional Conduct** | | | | | | |
| 1 | I am able to demonstrate the defined limits of bioethical principles |  |  |  |  |  |
| 2 | I am able to apply principles in the Biomedical research and academia. |  |  |  |  |  |
| 3 | I am ethically responsible towards colleagues and research subjects. |  |  |  |  |  |
| 4 | I have ethical responsibility towards the wider community, and the environment. |  |  |  |  |  |
| **PLO 8 : Modern Tool Usage** | | | | | | |
| 1 | I can apply all the basic tools and techniques in basic medical biotechnology. |  |  |  |  |  |
| 2 | I can identify resources and tools to be used in understanding the basics of biotechnology research and capable to their efficient use. |  |  |  |  |  |
| 3 | I can demonstrate the use of tools with the respective techniques. |  |  |  |  |  |
| 4 | I can prepare standard operating procedure for the basic tools used in basic medical biotechnology. |  |  |  |  |  |
| **PLO 9 : Life Long learning** | | | | | | |
| 1 | I can demonstrate lifelong learning in the field of health and allied sciences. |  |  |  |  |  |
| 2 | I am able to name and recognize skills as per requirements in the field of medical biotechnology |  |  |  |  |  |
| 3 | I am curious to learn new things. |  |  |  |  |  |
| 4 | I am competent to acquire knowledge on my own through various sources. |  |  |  |  |  |
| **PLO 10: Practical Applications** | | | | | | |
| 1 | I am able to apply learning of human biological system in various practical contexts. |  |  |  |  |  |
| 2 | I am able to apply skills in medical biotechnology various multidisciplinary problems. |  |  |  |  |  |
| 3 | I can demonstrate academic learning to practical issues. |  |  |  |  |  |
| 4 | I am able to demonstrate the skills learned in research and development |  |  |  |  |  |
| **PLO11: Environment and Sustainability** | |  |  |  |  |  |
| 1 | I am able to recognize the significance of societal and environmental contexts |  |  |  |  |  |
| 2 | I am able to define and emphasize special stress in gaining sustainable development. |  |  |  |  |  |
| 3 | I can demonstrate the need to preserve and conserve the environment. |  |  |  |  |  |
| 4 | I have skills to distinguish the pros and cons of biotechnological advancement on environment and surroundings. |  |  |  |  |  |
| **PLO12:Medical Biotechnology and Society** | |  |  |  |  |  |
| 1 | I am able to analyse and investigate professional, ethical and societal. |  |  |  |  |  |
| 2 | I am able analyse and investigate environmental and economic responsibility with respect to medical biotechnology. |  |  |  |  |  |
| 3 | I am able to demonstrate responsibility for the implementation of targeted investigations in professional practices. |  |  |  |  |  |
| 4 | I am able to show relation between medical biotechnology to societal issues. |  |  |  |  |  |
| **Experience at AMITY** | | | | | | |
| 1 | I am overall satisfied with the methodologies and pedagogical tools used by my faculty. |  |  |  |  |  |
| 2 | I find the curriculum contemporary and relevant to the industry. |  |  |  |  |  |
| 3 | I got ample opportunities for Industry Interaction. |  |  |  |  |  |
| 4 | I am satisfied with the Internship facility provided to me. |  |  |  |  |  |
| 5 | I am satisfied with the University Infrastructure. |  |  |  |  |  |
| 6 | I am overall satisfied with the Faculties who taught me. |  |  |  |  |  |
| 7 | I am overall satisfied with the Programme. |  |  |  |  |  |

Thank you for taking the time to complete this survey.

**Student Exit Survey**

**Programme - M. Sc. Biotechnology Batch \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Dear Student, the objective of this Survey is to seek your candid assessment regarding the various learning aspects of the programme. The information from this survey will be analysed and used to identify the areas of improvement.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Statements** | **Strongly agree** | **Agree** | **Neither agree nor disagree** | **Somewhat Agree** | **Not at all agree** |
| **PLO 1 : Knowledge of Biotechnology** | | | | | | |
| 1 | I am able to recall factual information on broad knowledge based proficiency in central themes, principles and components of bioscience |  |  |  |  |  |
| 2 | I am able to apply concepts of Biosciences and Biotechnology in multi-disciplinary context |  |  |  |  |  |
| 3 | I am able to analyse implications of biotechnology in societal, environmental and educational frameworks. |  |  |  |  |  |
| 4 | I can apply theoretical knowledge into practice. |  |  |  |  |  |
| **PLO 2 : Biotechnology skills** | |  |  |  |  |  |
| 1 | I am updated with the tools and techniques in biotechnology |  |  |  |  |  |
| 2 | I am competent of identifying the highly specialized concepts in theoretical and applied aspects of Biotechnology. |  |  |  |  |  |
| 3 | I have developed the attitude of review and critically appraise the practical aspects of biotechnology. |  |  |  |  |  |
| 4 | I am able utilize the skills for disseminating information. |  |  |  |  |  |
| 5 | I have ability to develop creative, innovative and practical solution |  |  |  |  |  |
| **PLO 3 : Problem solving** | | | | | | |
| 1 | I am able to describe and critically analyse problems in Bioscienes & Biotechnology in a research or industrial environment with scientific literacy. |  |  |  |  |  |
| 2 | I am able to demonstrate knowledge of biological processes from the molecular and cellular perspectives. |  |  |  |  |  |
| 3 | I am to employ the appropriate techniques effectively and safely, including the appropriate use of equipment and tools to produce an acceptable outcome when performing a technical laboratory task. |  |  |  |  |  |
| 4 | I have ability to develop creative, innovative and practical solution and to prioritize my work. |  |  |  |  |  |
| **PLO 4 : Research acumen** | | | | | | |
| 1 | I have ability to plan, conduct, evaluate and report the results of investigations, including the use of secondary data in this process |  |  |  |  |  |
| 2 | I have ability to formulate research questions and set research goals. |  |  |  |  |  |
| 3 | I am able to critically analyze data/information and to interpret results for driving optimum solutions. |  |  |  |  |  |
| 4 | I am able to review and design a scientific research proposal and set its respective research goals |  |  |  |  |  |
| **PLO 5** : **Critical Thinking Skills** | |  |  |  |  |  |
| 1 | I am able to engage in the scientific process to form hypotheses, |  |  |  |  |  |
| 2 | I am able to synthesize scientific information, gather and analyze data. |  |  |  |  |  |
| 3 | I am capable of applying statistical techniques and draw conclusions. |  |  |  |  |  |
| 4 | I am able to use protocols to devise data collection procedures and analyze results. |  |  |  |  |  |
| **PLO 6 : Interpersonal Skills** | | | | | | |
| 1 | I have ability to present my scientific data confidently. |  |  |  |  |  |
| 2 | I am competent to interact professionally in cross- cultural teams. |  |  |  |  |  |
| 3 | I can communicate with my co-workers clearly and effectively. |  |  |  |  |  |
| 4 | I am a socially aware person with skills of problem solving |  |  |  |  |  |
| **PLO 7 : Communication skills** | |  |  |  |  |  |
| 1 | I am able to use the terminology, concepts and examples of biotechnology in presentations |  |  |  |  |  |
| 2 | I am able to write scientific information and data using facts and knowledge of biotechnology |  |  |  |  |  |
| 3 | I am able to formulate and evaluate scientific research pertaining to biotechnology in related fields. |  |  |  |  |  |
| 4 | I am good making presentation in global /cross cultural environment. |  |  |  |  |  |
| **PLO 8 : Team work and Leadership skills** | | | | | | |
| 1 | I am able to work in scientific team and also take leadership roles. |  |  |  |  |  |
| 2 | I am able to engage in effective scientific communication as individuals and as team members by listening, speaking, writing and presenting in oral and poster format |  |  |  |  |  |
| 3 | I can stay calm and is confident to initiate in a crisis situations and motivate/ lead my team. |  |  |  |  |  |
| 4 | I have learnt skills to complete assignments and projects on time. |  |  |  |  |  |
| **PLO 9 : Global Outlook** | | | | | | |
| 1 | I am able to correlate global issues with scientific information from different perspectives. |  |  |  |  |  |
| 2 | I find myself capable of applying my knowledge in local, national and international contexts |  |  |  |  |  |
| 3 | I learn from and respect different cultures in terms of research practices. |  |  |  |  |  |
| 4 | I know to communicate in multi-cultural context. |  |  |  |  |  |
| **PLO 10: Ethical and Professional Conduct** | | | | | | |
| 1 | I am able to apply ethical practices and behavior in all aspects of biotechnological scientific endeavors |  |  |  |  |  |
| 2 | I am ethically responsible towards colleagues, research subjects, the wider community, and the environment; |  |  |  |  |  |
| 3 | I strive for justice, equality, honesty, and integrity in all my personal and professional pursuits. |  |  |  |  |  |
| 4 | I strive for honesty and responsibility towards the environment and the knowledge we gain so as to put it to best use. |  |  |  |  |  |
| **PLO 11**: **Environment sensitivity** | | | | | | |
| 1 | I understand the need for conservation of environment |  |  |  |  |  |
| 2 | I recognize the relationship between Environmental, Social and economic sustainability and my role towards it. |  |  |  |  |  |
| 3 | I apply my knowledge in a diverse range of contexts pertaining to Environmental, Social and economic sustainability. |  |  |  |  |  |
| 4 | I strive to develop environmentally sustainable technologies |  |  |  |  |  |
| **PLO 12: Lifelong Learning** | | | | | | |
| 1 | I have curiosity to learn new things. |  |  |  |  |  |
| 2 | I am competent to acquire knowledge on my own through various sources such as journals, research papers etc. |  |  |  |  |  |
| 3 | I feel I am a self-directed learner. |  |  |  |  |  |
| 4 | I use my prior learning to approach a new problem. |  |  |  |  |  |
| **Experience at AMITY** | | | | | | |
| 1 | I am overall satisfied with the methodologies and pedagogical tools used by my faculty. |  |  |  |  |  |
| 2 | I find the curriculum contemporary and relevant to the industry. |  |  |  |  |  |
| 3 | I got ample opportunities for Industry Interaction. |  |  |  |  |  |
| 4 | I am satisfied with the Internship facility provided to me. |  |  |  |  |  |
| 5 | I am satisfied with the University Infrastructure. |  |  |  |  |  |
| 6 | I am overall satisfied with the Faculties who taught me. |  |  |  |  |  |
| 7 | I am overall satisfied with the Programme. |  |  |  |  |  |

Thank you for taking the time to complete this survey.

**Student Exit Survey**

**Programme Group : M. Tech. (Biotechnology)**

Dear Student, the objective of this Survey is to seek your candid assessment regarding the various learning aspects of the **M. Tech. (Biotechnology)** programme. The information from this survey will be analysed and used to identify the areas of improvement.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Statements** | **Strongly agree** | **Agree** | **Neither agree nor disagree** | **Somewhat Agree** | **Not at all agree** |
| **PLO 1 : Knowledge of Biosciences and Biotechnology** | | | | | | |
| 1 | I am able to explain the concepts in Biosciences & Biotechnology |  |  |  |  |  |
| 2 | I am able to design concepts of Biosciences and Biotechnology in multi-disciplinary context. |  |  |  |  |  |
| 3 | I appraise academic learning to practical issues. |  |  |  |  |  |
| 4 | I am able to plan and design R&D protocols in Biosciences & Biotechnology |  |  |  |  |  |
| **PLO 2: Holistic approach and problem solving** | | | | | | |
| 1 | I am able to achieve holistic development by acquiring knowledge and skills. |  |  |  |  |  |
| 2 | I am able to describe and critically analyse problems in Bioscienes & Biotechnology in a research or industrial environment. |  |  |  |  |  |
| 3 | I have ability to appraise, implement and test solutions. |  |  |  |  |  |
| 4 | I have ability to compare the best problem solving approach |  |  |  |  |  |
| **PLO 3 : Applications in Industry/ Research** | | | | | | |
| 1 | I am able to describe problems in Bioscienes & Biotechnology in a research or industrial environment. |  |  |  |  |  |
| 2 | I am able to critical analyse data/information. |  |  |  |  |  |
| 3 | I critically analyse problems in Bioscienes & Biotechnology in a research or industrial environment. |  |  |  |  |  |
| 4 | I am able to critically interpret results for driving optimum solutions. |  |  |  |  |  |
| **PLO 4 : Critical approach to generate new ideas** | | | | | | |
| 1 | I can critically appraise ideas |  |  |  |  |  |
| 2 | I am able to design informative data and critically analyse the same to provide meaningful definitive conclusions. |  |  |  |  |  |
| 3 | I can plan innovative methods. |  |  |  |  |  |
| 4 | I can devise and create practical solution. |  |  |  |  |  |
| **PLO 5 : Communication skills** | | | | | | |
| 1 | I have ability to speak proficiently. |  |  |  |  |  |
| 2 | I am competent to convey information in writing. |  |  |  |  |  |
| 3 | I can design effective methods of communication. |  |  |  |  |  |
| 4 | I can communicate clearly. |  |  |  |  |  |
| **PLO 6 : Interpersonal skills** | | | | | | |
| 1 | I am a good listener in professional business setting. |  |  |  |  |  |
| 2 | I am able to organize good presentation in global environment. |  |  |  |  |  |
| 3 | I can create good cross cultural environment. |  |  |  |  |  |
| 4 | I possess good set of interpersonal skills required for self and organization welfare. |  |  |  |  |  |
| **PLO 7 : Development of lab to market technologies** | | | | | | |
| 1 | I can develop novel solutions through the use of biological processes. |  |  |  |  |  |
| 2 | I have ability to develop creative solution. |  |  |  |  |  |
| 3 | I can develop novel solutions through processes derived from plants, bacteria, algae and fungi as sources of renewable energy, materials and chemicals. |  |  |  |  |  |
| 4 | I have ability to develop innovative and practical solution. |  |  |  |  |  |
| **PLO 8 : Ethical, environmental and social issues** | | | | | | |
| 1 | I understand the need for conservation of environment |  |  |  |  |  |
| 2 | I strive to develop environmentally sustainable technologies |  |  |  |  |  |
| 3 | I am Respectful & Empathetic towards others views irrespective of caste, race, class, gender, religion etc. |  |  |  |  |  |
| 4 | I understand and practice the highest standards of ethical behaviour associated with management profession. |  |  |  |  |  |
| **PLO 9 : Strategic planning** | | | | | | |
| 1 | I am able to effectively plan strategies to offer solutions through Biotechnology related processes. |  |  |  |  |  |
| 2 | I am able to explain the critical needs and opportunities for organisational growth. |  |  |  |  |  |
| 3 | I am able to implement strategies to offer solutions through Biotechnology related processes. |  |  |  |  |  |
| 4 | I am able to explain the opportunities for organisational growth. |  |  |  |  |  |
| **PLO 10: Lifelong learning** | | | | | | |
| 1 | I have curiosity to learn new things. |  |  |  |  |  |
| 2 | I am competent to acquire knowledge on my own through various sources. |  |  |  |  |  |
| 3 | I feel I am a self-directed learner. |  |  |  |  |  |
| 4 | I can apply my knowledge and skill set in my profession. |  |  |  |  |  |
| 5 | I use my prior learning to approach a new problem. |  |  |  |  |  |
| **PLO11:** **Leadership skills and Societal and Environmental impact** | | | | | | |
| 1 | I am able to work effectively as an individual and as a member or leader of team in diverse disciplines and cultures. |  |  |  |  |  |
| 2 | I am confident to initiate and lead my peer group in any situation. |  |  |  |  |  |
| 3 | I can stay calm in a crisis situations. |  |  |  |  |  |
| 4 | I plan to motivate my team in adverse situations. |  |  |  |  |  |
| **PLO12: Global outlook** | | | | | | |
| 1 | I am able to understand global issues from different perspectives. |  |  |  |  |  |
| 2 | I appraise and learn from and respect different cultures. |  |  |  |  |  |
| 3 | I know to communicate in multi-cultural context. |  |  |  |  |  |
| 4 | I plan to implement my learning for global exposure |  |  |  |  |  |
| **Experience at AMITY** | | | | | | |
| 1 | I find the curriculum contemporary and relevant to the industry. |  |  |  |  |  |
| 2 | I got ample opportunities for Industry Interaction. |  |  |  |  |  |
| 3 | I am satisfied with the Internship facility provided to me. |  |  |  |  |  |
| 4 | I am satisfied with the University Infrastructure. |  |  |  |  |  |
| 5 | I am overall satisfied with the Faculties who taught me. |  |  |  |  |  |
| 6 | I am overall satisfied with the Programme. |  |  |  |  |  |
| 7 | I am overall satisfied with the methodologies and pedagogical tools used by my faculty. |  |  |  |  |  |

Thank you for taking the time to complete this survey.

**Student Exit Survey**

**Programme - B. Tech. +M. Tech. Biotechnology Batch \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Dear Student, the objective of this Survey is to seek your candid assessment regarding the various learning aspects of the programme. The information from this survey will be analysed and used to identify the areas of improvement.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Statements** | | **Strongly agree** | **Agree** | **Neither agree nor disagree** | **Somewhat Agree** | **Not at all agree** | |
| **PLO 1 : Knowledge of Biosciences, Biotechnology and Engineering** | |
| 1 | I have ablility to apply concepts of Biosciences in multi-disciplinary context. | |  |  |  |  |  | |
| 2 | I have ability to apply knowledge of mathematics, science, engineering and Biotechnology in practice | |  |  |  |  |  | |
| 3 | I have ablility to apply concepts of Biotechnology in multi-disciplinary context. | |  |  |  |  |  | |
| 4 | I have ability to apply knowledge of research and innovation in practice. | |  |  |  |  |  | |
| **PLO 2:Problem solving** | | |
| 1 | I have ablility to describe and critically analyse problems in Bioscienes & Biotechnology in a research or industrial environment. | |  |  |  |  |  | |
| 2 | I have ability to identify, critically analyze, formulate and solve engineering problems with comprehensive knowledge in the area of specialization. | |  |  |  |  |  | |
| 3 | I have ability to develop creative, innovative and practical solution. | |  |  |  |  |  | |
| 4 | I have ability to implement and test solutions. | |  |  |  |  |  | |
| **PLO 3: Modern tools and techniques** | | | | | | | | |
| 1 | I am aware of modern tools in Biotechnology and can use them with dexterity. | |  |  |  |  |  | |
| 2 | I have ability to select modern engineering use them efficiently. | |  |  |  |  |  | |
| 3 | I have ability to select biological techniques and use them skillfully. | |  |  |  |  |  | |
| 4 | I am aware of advancement in research related to biotechnology and Biosciences. | |  |  |  |  |  | |
| **PLO 4 : Research acumen** | | |
| 1 | I have ability to devise and conduct experiments, interpret data and provide well informed conclusions. | |  |  |  |  |  | |
| 2 | I have ability to formulate research questions and set research goals. | |  |  |  |  |  | |
| 3 | I have ability to critical analyse data/information and interpret results for driving optimum solutions. | |  |  |  |  |  | |
| 4 | I have ability to review and systematically interpret research goals | |  |  |  |  |  | |
| 5 | I have ability to contribute by research and innovation to solve engineering problems | |  |  |  |  |  | |
| **PLO 5 : Communication Skills** | | |
| 1 | I have ability to speak proficiently. | |  |  |  |  |  | |
| 2 | I am competent to convey information in writing. | |  |  |  |  |  | |
| 3 | I can Communicate clearly and effectively. | |  |  |  |  |  | |
| 4 | I think, I am quite a good listener in professional business setting. | |  |  |  |  |  | |
| 5 | I am good making presentation in global /cross cultural environment. | |  |  |  |  |  | |
| **PLO 6 : Team work Leadership and Behavioural Skills** | | |
| 1 | I am reliable and dependable. | |  |  |  |  |  | |
| 2 | I am Respectful & Empathetic towards others views irrespective of caste, race, class, gender, religion etc. | |  |  |  |  |  | |
| 3 | I am a collaborative team worker. | |  |  |  |  |  | |
| 4 | I can stay calm in a crisis situations and motivate my team. | |  |  |  |  |  | |
| 5 | I am confident to initiate and lead my peer group in any situation. | |  |  |  |  |  | |
| **PLO 7: Ethical and Professional Conduct** | | |
| 1 | I have ability to function professionally with ethical responsibility as an individual as well as in multidisciplinary and cross cultural teams with positive attitude | |  |  |  |  |  | |
| 2 | I understand and practice the highest standards of ethical behaviour associated with management profession. | |  |  |  |  |  | |
| 3 | I am ethical responsible towards colleagues, research subjects, the wider community, and the environment; | |  |  |  |  |  | |
| 4 | I strive for justice, equality, honesty, and integrity in all my personal and professional pursuits | |  |  |  |  |  | |
| **PLO 8 : Employability Entrepreneurship Skill** | | |
| 1 | I have basic business acumen & business skills to be employable. | |  |  |  |  |  | |
| 2 | I can create visibility for myself to draw attention of a recruiter. | |  |  |  |  |  | |
| 3 | I possess entrepreneur skill. | |  |  |  |  |  | |
| 4 | I always find opportunities to improve the business value chain. | |  |  |  |  |  | |
| **PLO 9**: **Environment sensitivity** | | |
| 1 I understand the need for conservation of environment | | | |  |  |  |  |
| 2 I strive to develop environmentally sustainable technologies | | | |  |  |  |  |
| 3 I have learned to study the effects of research technologies on environment | | | |  |  |  |  |
| 4 I have learned to conserve the association existing in the environment | | | |  |  |  |  |
| **PLO 10: Lifelong Learning** | | |
| 1 | I have ability to appreciate the importance of goal setting and to recognize the need for life-long reflective learning | |  |  |  |  |  | |
| 2 | I have curiosity to learn new things. | |  |  |  |  |  | |
| 3 | I am competent to acquire knowledge on my own through various sources. | |  |  |  |  |  | |
| 4 | I feel I am a self-directed learner. | |  |  |  |  |  | |
| 5 | I can apply my knowledge and skill set in my profession. | |  |  |  |  |  | |
| 6 | I use my prior learning to approach a new problem. | |  |  |  |  |  | |
| **Experience at AMITY** | |
| 1 | I am overall satisfied with the methodologies and pedagogical tools used by my faculty. | |  |  |  |  |  | |
| 2 | I find the curriculum contemporary and relevant to the industry. | |  |  |  |  |  | |
| 3 | I got ample opportunities for Industry Interaction. | |  |  |  |  |  | |
| 4 | I am satisfied with the Internship facility provided to me. | |  |  |  |  |  | |
| 5 | I am satisfied with the University Infrastructure. | |  |  |  |  |  | |
| 6 | I am overall satisfied with the Faculties who taught me. | |  |  |  |  |  | |
| 7 | I am overall satisfied with the Programme. | |  |  |  |  |  | |

Thank you for taking the time to complete this survey.

**Student Exit Survey**

**Programme – B. Sc. + M. Sc. (dual) Biotechnology Batch \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Dear Student, the objective of this Survey is to seek your candid assessment regarding the various learning aspects of the programme. The information from this survey will be analysed and used to identify the areas of improvement.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Statements** | **Strongly agree** | **Agree** | **Neither agree nor disagree** | **Somewhat Agree** | **Not at all agree** |
| **PLO 1 : Knowledge of Biosciences and Biotechnology** | | | | | | |
| 1 | I am able to devise, summarize the concepts in Biosciences & Biotechnology |  |  |  |  |  |
| 2 | I am able to practically design concepts of Biosciences and Biotechnology in inter-disciplinary context. |  |  |  |  |  |
| 3 | I have ability to decribe knowledge of mathematics, science, engineering and Biotechnology in practice |  |  |  |  |  |
| 4 | I have ability to describe the knowledge of research and innovation in practice. |  |  |  |  |  |
| **PLO 2: Problem solving** | | | | | | |
| 1 | I demonstrate the skills to solve the problems in biotechnology |  |  |  |  |  |
| 2 | I am able to categorize the skills to plan a diverse range of biotechnology divisions. |  |  |  |  |  |
| 3 | I am able to describe practical solutions within biotechnology area. |  |  |  |  |  |
| 4 | I can apply various decision making methods to scientifically solve any biotechnology problem. |  |  |  |  |  |
| **PLO3 : Research and development acumen** | | | | | | |
| 1 | I have the ability to design research proposals and set research goals. |  |  |  |  |  |
| 2 | I am able to use appropriate tools in solving problems related to research and development. |  |  |  |  |  |
| 3 | I am able to analyse and interpret research goals |  |  |  |  |  |
| 4 | I am able to use knowledge and scientifically proven methodologies to demonstrate basic medical biotechnology experiments |  |  |  |  |  |
| **PLO 4 : Cognitive and analytical skills** | | | | | | |
| 1 | I am able to identify and create specialized concepts of biotechnology. |  |  |  |  |  |
| 2 | I am able to describe and outline the problems in Biosciences and biotechnology in a research environment. |  |  |  |  |  |
| 3 | I am able to systematically explain and critically evaluate these specialized concepts in biotechnology. |  |  |  |  |  |
| 4 | I can translate academic learning to practical issues and I am able to identify problems and prepare small projects for the analysis of the same. |  |  |  |  |  |
| **PLO 5 : Communication Skills** | | | | | | |
| 1 | I have ability to speak proficiently and explain my ideas clearly. |  |  |  |  |  |
| 2 | I am good at creating presentation to effectively propagate research and technical information. |  |  |  |  |  |
| 3 | I have ability to write clearly. |  |  |  |  |  |
| 4 | I have ability to speak proficiently |  |  |  |  |  |
| **PLO 6 : Leadership Skills** | | | | | | |
| 1 | I am able to perform given assignments, experiments and activities, individually as well as in a group. |  |  |  |  |  |
| 2 | I am able to also lead my team and guide them in the given activities |  |  |  |  |  |
| 3 | I am reliable and dependable. |  |  |  |  |  |
| 4 | I am respectful and empathetic towards others views irrespective of caste, race, class, gender, religion etc. |  |  |  |  |  |
| **PLO7:Biotechnological skills** | | | | | | |
| 1 | I am able to demonstrate theoretical knowledge, technical information, and research methods to solve applied biotechnological practices. |  |  |  |  |  |
| 2 | I am able to analyse and interpret outcomes of these applied biotechnological skills. |  |  |  |  |  |
| 3 | I can apply all the basic tools and techniques in biotechnology. |  |  |  |  |  |
| 4 | I can identify resources and tools to be used in understanding the basics of biotechnology research and capable to their efficient use. |  |  |  |  |  |
| **PLO 8 :Ethical and Professional Conduct** | | | | | | |
| 1 | I understand and practice highest standards of ethics while applying biotechnological principles in environmental and other socially sensitive issues. |  |  |  |  |  |
| 2 | I am ethically responsible towards colleagues, research subjects, wider community and environment. |  |  |  |  |  |
| 3 | I am able to demonstrate the defined limits of bioethical principles |  |  |  |  |  |
| 4 | I am able to apply principles in the biotechnology research and academia. |  |  |  |  |  |
| **PLO 9: Technical and Managerial skills** | | | | | | |
| 1 | I can design the technical and managerial skills to achieve self and organizational goals |  |  |  |  |  |
| 2 | I am able to describe the technical and managerial skills to proficiently organise and achieve my set goals |  |  |  |  |  |
| 3 | I have developed in the program to be reliable and dependable and manage the team to complete the assigned tasks |  |  |  |  |  |
| 4 | I have the technical skill to perform experiments |  |  |  |  |  |
| **PLO10:Lifelong learning** | | | | | | |
| 1 | I can demonstrate lifelong learning in the field of health and allied sciences. |  |  |  |  |  |
| 2. | I am able to name and recognize skills as per requirements in the field of biotechnology |  |  |  |  |  |
| 3 | I am curious to learn new things. |  |  |  |  |  |
| 4 | I am competent to acquire knowledge on my own through various sources. |  |  |  |  |  |
| **PLO11:Environmental awareness and sustainability** | | | | | | |
| 1 | I am able to recognize the significance of societal and environmental contexts |  |  |  |  |  |
| 2 | I am able to define and emphasize special stress in gaining sustainable development. |  |  |  |  |  |
| 3 | I can demonstrate the need to preserve and conserve the environment. |  |  |  |  |  |
| 4 | I have skills to distinguish the pros and cons of biotechnological advancement on environment and surroundings. |  |  |  |  |  |
| **PLO12: Advancement of science and society** | | | | | | |
| 1 | I can explain the need for development of biotechnological applications for the betterment of science and society |  |  |  |  |  |
| 2 | I am capable of planing research ideas for society. |  |  |  |  |  |
| 3 | I am capable comparing research principles to be applied for the betterment of science and society. |  |  |  |  |  |
| 4 | I am able analyse and investigate environmental and economic responsibility with respect to biotechnology. |  |  |  |  |  |
| **Experience at AMITY** | | | | | | |
| 1 | I am overall satisfied with the methodologies and pedagogical tools used by my faculty. |  |  |  |  |  |
| 2 | I find the curriculum contemporary and relevant to the industry. |  |  |  |  |  |
| 3 | I got ample opportunities for Industry Interaction. |  |  |  |  |  |
| 4 | I am satisfied with the Internship facility provided to me. |  |  |  |  |  |
| 5 | I am satisfied with the University Infrastructure. |  |  |  |  |  |
| 6 | I am overall satisfied with the Faculties who taught me. |  |  |  |  |  |
| 7 | I am overall satisfied with the Programme. |  |  |  |  |  |

Thank you for taking the time to complete this survey.

**COMPREHENSIVE EXAMINATION**

Comprehensive Examination Guidelines for B. Tech. Programmes for intended Programme Learning Outcomes

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Purpose** | To assess attainment of programme goals in the core and | | | | | | | | specialization | | | |
|  | areas of all the programmes in domain of Biosciences and Biotechnology. | | | | | | | | | | | |
|  |  |  | | | | | | | | | | |
| **Goal(s)** | 1. | | | To assess professional ethics leadership and consensus building | | | | | | | | |
|  |  | | | skills, relevant to scientific aspects of the field of life sciences. | | | | | | | | |
|  | 2. | | | To assess the knowledge and proficiency in mathematical, statistical | | | | | | | | |
|  |  | | | and computational skills. | | | |  | | | |  |
|  | 3. | | | To assess students technical skills and hands-on training in | | | | | | | | |
|  |  | | | biotechnology and the application of computers in bio-technology | | | | | | | | |
|  | 4. | | | To assess the ability to conduct research and use various tools and | | | | | | | | |
|  |  | | | the holistic knowledge acquired for problem-solving and decision- | | | | | | | | |
|  |  | | | making in biotechnology. | | | |  | | | |  |
|  | 5. | | | To assess the communication, leadership and team skills | | | | | | | | |
|  |  | | | and ability to make ethical choices. | | | |  | | | |  |
|  | 6. | | | To assess the understanding of industry scenario and ability to | | | | | | | | |
|  |  | | | convert opportunities into research propositions through innovation, | | | | | | | | |
|  |  | | | creativity and risk-taking for sustainable competitive advantage. | | | | | | | | |
| **Process:** |  | The comprehensive examination would be conducted at the end of | | | | | | | | | | |
|  |  | each academic year. | | | |  | | | |  | | |
|  |  |  | | | | | | | | | | |
| **Format** | 1. | | | The examination will be based on multiple choice questions. The | | | | | | | | |
|  |  | | | question paper will consist of eight sections. | | | | | | | |  |
|  |  | | 1. | | Section A: - General Biotechnology- | | 30 Questions / | | | | 60 Marks | |
|  |  | | 2. | | Section B: - Application Based- | | 20 Questions / | | | | 50 Marks | |
|  |  | | 3. | | Section C: - Specialisation/Area Specific- 15 Questions / | | | | | | 30 Marks | |
|  |  | | 4. Section D: - General Education, | | | | General Awareness & Life-long | | | | | |
|  |  | |  | | Learning- 15 Questions / 15 Marks | |  | | | |  | |
|  |  | | 5. Section E: - Ethics, Social & Environmental Impact- 10 Questions / 15 | | | | | | | | | |
|  |  | |  | | Marks | |  | | | |  | |
|  |  | | 6. Section F: Information and Digital Literacy – 10 Questions / 10 Marks | | | | | | | | | |
|  |  | | 7. | | Section G: Global Outlook – 10 Questions / 10 Marks | | | | | |  | |
|  |  | | 8. Section H: - Employability and Entrepreneurship-10 Questions / 10 Marks | | | | | | | | | |
|  |  | 1. **Section A : General Biotechnology -30 Questions/60 Marks:** This section shall comprise of theory based/conceptual questions from core areas of Biotechnology- Basics of Biotechnology, Industrial Biotechnology, Cell Biology, Biochemistry, Microbiology Molecular Biology, Biochemical engineering, Bioinformatics, Computational Biology, and integration of all above. | | | | | | | | | | |
|  | 3.  **Section B : Application based -20 Questions/50 Marks:** This section shall comprise of questions on general biotechnology which will have focus on applications of various concepts, principles and theories. | | | | | | | | | | | |
|  |  | 1. **Section C: - Specialisation/Area Specific- 15 Questions each/30 Marks:**   his section shall comprise of theory and application based questions from specialised/sectoral areas of Biotechnology viz.   * 1. Industrial and pharmaceutical biotechnology management   2. Recombinant DNA Technology   3. Bioprocess Technology   4. Cell Biology   5. Biosensors   6. Stem cell and tissue engineering   7. Enzyme Technology   8. Molecular biology   9. Computational Biology   10. Computer programming   (This section will have an option of choosing their specialization area(s) opted by the student. More specialization areas may be added). | | | | | | | | | | |
|  | 1. **Section D:- General Education, General Awareness & Life-long Learning- 15 Questions/15 Marks.**   This section shall comprise of questions based on general awareness in various areas, and knowledge acquired through various sources viz. seminars, conferences, news (electronic and print media), journals, magazines, reports and books related to various subjects such as sports, spirituality, religion, literature, Humanities and Social Sciences etc which may be of life-long importance. | | | | | | | | | | |

|  |  |
| --- | --- |
|  | 1. **Section E:- Bio-ethics, Social & Environmental Impact - 10 Questions/15 Marks.**   This section shall comprise of questions based on issues having ethical, social, cultural and environmental implications. |
|  | 1. **Section F: Information and Digital Literacy/Modern tools usage – 10 Questions/10 Marks.**   This section shall comprise of questions based on awareness and usage level of Information Technology software/tools. |
|  | 1. **Section G: Global Outlook on Research/Industry in Biosciences and Biotechnology– 10 Questions/10 Marks: -**   This section shall comprise of questions based on global, social, technological, environmental developments and issues impacting research /industry. |
|  | 1. **Section H: - Employability - 10 Questions/10 Marks.**   This section shall comprise of questions based on latest research development and trends, Planning and designing experimental research, Experimental and Theoretical Data Analysis, Investigating skills, Decision Making, Leadership & Team spirit through case-lets. |

**Faculty of Biosciences and Biotechnology**

**Comprehensive Examination Guidelines for B. Sc Programmes for intended Programme Learning Outcomes**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Purpose** | **:** | To assess attainment | | | of programme | goals in | the core and | specialisation | |
|  |  | areas of all the programmes in domain of Biosciences and Biotechnology. | | | | | | | |
|  |  |  |  | | | | | | |
| **Goal(s)** | : | 1. | To assess the knowledge and understanding of fundamental relevant | | | | | | |
|  |  |  | questions in life science and biotechnology in a synergistic | | | | | | |
|  |  |  | framework. | |  |  |  |  |  |
|  |  | 2. | To assess the analysing capabilities of | | | | | | |
|  |  |  | theoretical and applied aspects of Biosciences and | | | | | | |
|  |  |  | Biotechnology | |  |  |  |  |  |
|  |  | 3. | To assess the ability to conduct research and use various tools and | | | | | | |
|  |  |  | the holistic knowledge acquired for problem-solving and decision- | | | | | | |
|  |  |  | making in biotechnology. | | |  |  |  |  |
|  |  | 4. | To assess the understanding of industry scenario and skills required for employability. | | | | | | |
|  |  |  |  | | | | | | |
|  |  |  |  | | | | | | |
|  |  | 5. | To assess the research communication, leadership and team skills | | | | | | |
|  |  |  | and ability to make ethical choices. | | | |  |  |  |
|  |  |  |  | | | | | | |
| **Process:** | : |  | The comprehensive examination would be conducted at the end of | | | | | | |
|  |  |  | each academic year. | | |  |  |  |  |
|  |  |  |  | | | | | | |
| **Format** | : | 1. | The examination will be based on multiple choice questions. The | | | | | | |
|  |  |  | question paper will consist of eight sections. | | | | |  |  |
|  |  |  | 1. | Section A: - General Biotechnology- | | | 30 Questions / | 60 | Marks |
|  |  |  | 2. | Section B: - Application Based- | | | 20 Questions / | 50 Marks | |
|  |  |  | 3. | Section C: - Specialisation/Area Specific- 15 Questions / | | | | 30 Marks | |
|  |  |  | 4. | Section D: - General Education, General Awareness & Life-long | | | | | |
|  |  |  |  | Learning- 15 Questions / 15 Marks | | |  |  |  |
|  |  |  | 5. | Section E: - Ethics, Social & Environmental Impact- 10 Questions / 15 | | | | | |
|  |  |  |  | Marks |  |  |  |  |  |
|  |  |  | 6. | Section F: Information and Digital Literacy – 10 Questions / 10 Marks | | | | | |
|  |  |  | 7. | Section G: Global Outlook – 10 Questions / 10 Marks | | | |  |  |
|  |  |  | 8. | Section H: - Employability and Entrepreneurship-10 Questions / 10 Marks | | | | | |
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|  |  | 1. **Section A : General Biosciences and Biotechnology -30 Questions / 60 Marks**   This section shall comprise of theory / asked/conceptual questions from core area of Biotechnology – Plant sciences, Animal Sciences, Environmental studies, Chemistry, Biophysics, Biostatistics, Microbiology, Cell Biology, Biochemistry, Molecular Biology, Bioinformatics, and integration of all above. |
|  |  | 1. **Section B: - Application Based- 20 Questions/50 Marks: -**   Thissection shall comprise of questions on general biotechnology which will have focus on applications of various concepts, principles and theories. |
|  |  | **4. Section C: - Specialisation/Area Specific- 15 Questions each/30Marks:**  This section shall comprise of theory and application based questions from specialised/sectoral areas of Biotechnology viz.   * 1. Plant Biotechnology   2. Animal Biotechnology   3. Environmental Biotechnology   4. Clinical Biochemistry   5. Microbial Technology   6. Genetics   7. Hematology/ serology   8. Infectious Disease   9. Cancer Biology   10. Developmental Biology   11. Marine Sciences   (This section will have an option of choosing their specialization area(s) opted by the student. More specialization areas may be added.) |
|  |  | **5 Section D:- General Education, General Awareness & Life-long Learning- 15 Questions/15 Marks.**  This section shall comprise of questions based on general awareness in various areas, and knowledge acquired through various sources viz. seminars, conferences, news (electronic and print media), journals, magazines, reports and books related to various subjects such as sports, spirituality, religion, literature, humanities and social sciences etc which may be of life-long importance. |
|  |  | 1. **Section E:- Ethics, Social and Environmental Impact of Bioscience and Biotechnological Research- 10 Questions/15 Marks.**   This section shall comprise of questions based on issues having ethical, social, cultural and environmental implications. |
|  |  | 1. **Section F: Information and Digital Literacy/Modern tools usage – 10 Questions/10 Marks**   This section shall comprise of questions based on awareness and usage level of Information Technology software/tools. |

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|  |  | 1. **Section G: Global Outlook on Research/Industry in Biosciences and Biotechnology– 10 Questions/10 Marks: -**   This section shall comprise of questions based on global, social, technological, environmental developments and issues impacting research/industry. |
|  |  | 1. **Section H: - Employability - 10 Questions/10 Marks.**   This section shall comprise of questions based on latest research development and trends, planning and designing experimental research, experimental and theoretical data analysis, investigating skills, decision making, leadership & team spirit through case-lets. |