

Centre for Distance and Online Education

Jamia Millia Islamia

New Delhi – 110025

Programme Project Report

Bachelor of Science (B.Sc.) Biosciences

1. Programme's Mission and Objectives

Mission

The mission of the B.Sc. Biosciences programme offered by the Centre for Distance and Online Education (CDOE), Jamia Millia Islamia is to provide high-quality, flexible, and inclusive education in biological sciences through Open and Distance Learning (ODL) and Online Mode. The programme aims to develop scientifically competent graduates with strong conceptual knowledge, practical understanding, analytical skills, and ethical values to contribute effectively to the fields of life sciences, healthcare, biotechnology, environmental sustainability, and scientific research.

Objectives

- To provide comprehensive knowledge of biological sciences including Botany, Zoology, Microbiology, Genetics, Biochemistry, Biotechnology, Ecology, and related disciplines.
- To develop scientific temper, analytical thinking, and problem-solving abilities among learners.
- To equip students with theoretical and practical understanding of biological systems and processes.
- To prepare learners for higher education, research, and professional careers in life sciences and allied sectors.
- To promote awareness of biodiversity conservation, environmental sustainability, and public health issues.

- To enhance employability skills relevant to biotechnology, healthcare, agriculture, environmental management, and research organizations.
- To foster ethical, responsible, and evidence-based approaches towards scientific inquiry and innovation.

2. Relevance of Programme with HEI Mission and Goals

The B.Sc. Biosciences programme is strongly aligned with the mission and vision of Jamia Millia Islamia, which emphasize academic excellence, inclusivity, innovation, and societal development.

- The programme expands access to quality science education for diverse categories of learners through ODL and Online modes.
- It supports the University's commitment to promoting scientific knowledge and research-oriented learning.
- It contributes to national priorities in biotechnology, healthcare, environmental sustainability, and scientific capacity building.
- It encourages lifelong learning and skill development in emerging areas of biological sciences.
- It promotes interdisciplinary learning and application of biological knowledge to address real-world challenges.
- It strengthens employability and entrepreneurship opportunities in life science sectors.

3. Nature of Prospective Target Group of Learners

The programme is designed for a broad spectrum of learners, including:

- Students who have completed 10+2 with Science and wish to pursue higher education in biological sciences.
- Learners aspiring for careers in biotechnology, healthcare, pharmaceuticals, agriculture, environmental sciences, and research.
- Working professionals seeking academic qualifications or knowledge enhancement in life sciences.

- Learners preparing for competitive examinations and higher studies such as M.Sc., M.Tech., and research programmes.
- Students from rural and urban backgrounds seeking flexible learning opportunities.
- Women learners, differently-abled learners, and economically disadvantaged groups who require accessible education.
- Lifelong learners interested in understanding biological systems, health, and environmental issues.

The programme promotes inclusivity, flexibility, accessibility, and equal educational opportunities for all learners.

4. Appropriateness of Programme for ODL/Online Mode

The B.Sc. Biosciences programme is well suited for delivery through ODL and Online modes due to the availability of comprehensive self-learning materials, digital learning resources, and technology-enabled teaching methods.

- Biological science concepts can be effectively taught through multimedia content, virtual demonstrations, animations, and digital learning platforms.
- Flexible learning enables students to pursue education while balancing employment and personal responsibilities.
- Learning Management Systems (LMS) facilitate interactive learning, discussions, assignments, and assessments.
- Virtual laboratories, simulations, video demonstrations, and digital resources supplement practical learning experiences.
- Continuous assessment and learner support mechanisms enhance academic engagement and learning outcomes.
- The programme develops scientific knowledge, analytical skills, and practical competencies consistent with contemporary educational and industry requirements.

5. Instructional Design

The instructional design of the programme includes:

- Self-Learning Material (SLM) prepared according to UGC-DEB guidelines with clearly defined learning outcomes.
- Printed and digital learning resources designed for self-paced learning.
- Learning Management System (LMS) for content delivery, discussions, assignments, and learner support.
- Video lectures, recorded sessions, animations, and multimedia learning resources.
- Academic counselling sessions through online and offline modes.
- Practical demonstrations through virtual laboratory resources, simulations, and laboratory contact programmes wherever applicable.
- Continuous internal assessment through assignments, quizzes, presentations, and project work.
- Semester-end examinations for comprehensive evaluation of learning outcomes.
- Mentoring and academic support services to facilitate learner progression and success.

B.Sc. Biosciences Curriculum Structure

Year 1 - Semester I

S. No.	Course Code	Course Title	Credit	Assignment	Term End	Total
1	DBSB-101	Animal Diversity-I	4	30	70	100
2	DBSB-102	Plant Diversity-I	4	30	70	100
3	DBSB-103	Cell Structure and Function	4	30	70	100
4	DBSB-104	Chemistry-I	4	30	70	100
5	DBSB-105	General English-I	4	30	70	100
6	DBSB-106	Lab Course-I	4	30	70	100

Year 1 - Semester II

S. No.	Course Code	Course Title	Credit	Assignment	Term End	Total
1	DBSB-201	Animal Diversity-II	4	30	70	100
2	DBSB-202	Plant Diversity-II	4	30	70	100
3	DBSB-203	Chemistry-II	4	30	70	100
4	DBSB-204	Biomathematics and Biostatistics	4	30	70	100
5	DBSB-205	Ecology	4	30	70	100
6	DBSB-206	Lab Course-II	4	30	70	100

Year 2 - Semester III

S. No.	Course Code	Course Title	Credit	Assignment	Term End	Total
1	DBSB-301	Genetics	4	30	70	100
2	DBSB-302	Molecular Biology	4	30	70	100
3	DBSB-303	Applied Microbiology	4	30	70	100
4	DBSB-304	Biochemistry-I	4	30	70	100
5	DBSB-305	Lab Course-III	4	30	70	100

Year 2 - Semester IV

S. No.	Course Code	Course Title	Credit	Assignment	Term End	Total
1	DBSB-401	Introduction to Biodiversity	4	30	70	100
2	DBSB-402	Immunology	4	30	70	100
3	DBSB-403	Bioanalytical Tools	4	30	70	100
4	DBSB-404	Biophysics	4	30	70	100
5	DBSB-405	Lab Course-IV	4	30	70	100

Year 3 - Semester V

S. No.	Course Code	Course Title	Credit	Assignment	Term End	Total
1	DBSB-501	Environmental Science	4	30	70	100
2	DBSB-502	Recombinant DNA Technology (CBCE)	4	30	70	100
3	DBSB-503	Plant Biotechnology	4	30	70	100
4	DBSB-504	Biochemistry-II	4	30	70	100
5	DBSB-505	Public Health	4	30	70	100
6	DBSB-506	Lab Course-V	4	30	70	100

Year 3 - Semester VI

S. No.	Course Code	Course Title	Credit	Assignment	Term End	Total
1	DBSB-601	Developmental Biology	4	30	70	100
2	DBSB-602	Animal Behaviour	4	30	70	100
3	DBSB-603	Organic Evolution	4	30	70	100
4	DBSB-604	Bioinformatics	4	30	70	100
5	DBSB-605	Animal Physiology	4	30	70	100
6	DBSB-606	Lab Course-VI	4	30	70	100

5. Teaching-Learning Methodology

Teaching-Learning Methods:

- Self-Learning Materials (SLMs) specially designed for Biosciences courses
- Online lectures, webinars, and virtual classroom sessions
- Video demonstrations of biological concepts, laboratory techniques, and experiments
- Assignments, case studies, tutorials, and project work
- Practical-based learning through laboratory manuals, virtual demonstrations, and field-based activities where applicable
- Interactive discussions and academic counseling sessions

Learning Management System (LMS):

- Google Classroom as a central platform for content delivery
- Access to e-content, lecture notes, presentations, and recorded lectures
- Student-teacher interaction and discussion forums
- Assignment submission, feedback, and evaluation
- Notifications regarding academic activities, examinations, and practical components

Credit System:

- Credit-based curriculum aligned with UGC guidelines and NEP recommendations
- Theory and practical credits assigned according to programme requirements

Student Support:

- Academic counseling and mentoring sessions
- Subject-specific doubt-clearing sessions
- Access to digital library resources, e-books, and scientific journals
- Technical support for LMS and online learning platforms
- Career guidance and higher education counseling

6. Admission, Curriculum Transaction and Evaluation

Admission Policy:

- Minimum eligibility: 10+2 (Science Stream) or equivalent from a recognized board
- Merit-based admission as per university regulations
- Reservation policy as per Government of India and University norms
- Transparent fee structure approved by the University

Curriculum Transaction:

- Delivery through LMS, printed study materials, online lectures, and academic counseling sessions
- Structured academic calendar for semester-wise learning
- Continuous interaction between learners and faculty members
- Practical components supported through laboratory manuals, demonstrations, and project work where applicable

Evaluation System:

- Internal Assessment (IA): Assignments, quizzes, tutorials, and projects
- University Examination (UE) for theory papers
- Practical examinations, laboratory records, and project evaluation where applicable
- Grading and credit system as per University and UGC norms

7. Laboratory Support and Library Resources**Laboratory Support:**

- Practical manuals and laboratory handbooks for Biosciences courses
- Virtual laboratory demonstrations and video-based practical learning resources
- Laboratory facilities of the University/approved centers for practical courses, wherever applicable
- Project-based and field-based learning activities

Library Resources:

- CDOE Library resources including textbooks, reference books, and study materials
- Access to digital library facilities and e-resources
- Scientific journals, databases, and research publications in Biological Sciences
- Printed and digital Self-Learning Materials (SLMs)

8. Cost Estimate of the Programme

The financial structure of the programme includes:

- Curriculum design and development cost
- Preparation and revision of Self-Learning Materials (SLMs)
- LMS development, maintenance, and digital infrastructure cost
- Faculty, academic counselor, and practical instructor remuneration
- Student support and academic counseling services
- Library and e-resource subscription cost

- Examination, practical evaluation, and assessment cost
- Administrative and operational expenses

The programme is designed to remain cost-effective while ensuring quality education in Biological Sciences.

1st Year	2nd Year	3rd Year
Rs 40,000	Rs 40,000	Rs 40,000

9. Quality Assurance Mechanism and Expected Programme Outcomes

Quality Assurance Mechanism:

- Monitoring by the Internal Quality Assurance Cell (IQAC)
- Periodic curriculum review and updating in accordance with advances in Biological Sciences
- Feedback from learners, faculty members, researchers, and subject experts
- Continuous improvement of learning materials, laboratory resources, and teaching methodologies
- Compliance with UGC-DEB regulations and University quality standards

Expected Programme Outcomes (POs):

After successful completion of the programme, learners will be able to:

- Demonstrate a comprehensive understanding of fundamental concepts in Biological Sciences
- Explain the structure, function, diversity, and evolution of living organisms
- Apply biological principles and scientific methods to solve real-world problems
- Perform basic laboratory techniques and interpret biological data
- Analyze environmental, ecological, and health-related issues using scientific approaches
- Communicate scientific information effectively through written and oral presentations
- Develop critical thinking, analytical, and research skills in Biosciences
- Pursue higher studies, research, teaching, biotechnology, healthcare, environmental science, and allied life science careers
- Understand ethical, social, and environmental responsibilities associated with biological sciences
- Adapt to emerging developments in biotechnology, molecular biology, genetics, bioinformatics, and related disciplines.