

## **B.Sc. in Data Science**

### **Program Educational Objectives (PEOs)**

#### **PEO1: Core Knowledge and Skills**

Provide graduates with a strong foundation in mathematics, statistics, and computer science to analyze and solve complex data-driven problems effectively.

#### **PEO2: Advanced Analytical and Computational Proficiency**

Prepare graduates to leverage machine learning, artificial intelligence, and big data technologies for designing predictive and prescriptive models in various domains.

#### **PEO3: Research and Innovation**

Equip graduates with the ability to conduct research, innovate, and develop scalable solutions to address real-world challenges in data science.

#### **PEO4: Professional Growth and Adaptability**

Enable graduates to pursue higher education, engage in lifelong learning, and adapt to evolving technologies, tools, and methodologies in data science.

#### **PEO5: Ethical Responsibility and Leadership**

Instill ethical values, teamwork, and leadership qualities to address societal and global challenges while ensuring responsible data usage and sustainability.

### **Program Outcomes (POs)**

Upon completion of the B.Sc. Data Science program, graduates will be able to:

**PO1: Foundational Knowledge:** Demonstrate a strong foundation in mathematics, statistics, and computational principles for analyzing complex datasets.

**PO2: Data Analysis Skills:** Develop the ability to identify, formulate, and analyze data-driven problems using first principles of mathematics, natural sciences, and domain-specific knowledge.

**PO3: Model Design and Development:** Design and implement efficient data models, algorithms, and solutions that address real-world problems while ensuring accuracy and scalability.

**PO4: Research and Experimentation:** Utilize research methodologies to conduct experiments, interpret data, and derive meaningful insights to provide innovative solutions.

**PO5: Modern Tools and Technologies:** Proficiently use modern tools and software for data analysis, machine learning, and visualization while understanding their limitations.

**PO6: Ethical and Social Responsibility:** Apply ethical principles and recognize societal, legal, and environmental implications of data science practices in professional scenarios.

**PO7: Sustainability Awareness:** Advocate for sustainable data solutions and practices, ensuring a balance between innovation and environmental stewardship.

**PO8: Ethics:** Ability to apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

**PO9: Individual and team work:** Work effectively as an individual, and as a team member or leader, in diverse and multidisciplinary settings to achieve project goals.

**PO10: Effective Communication:** Convey complex data science concepts and findings effectively to both technical and non-technical audiences through clear documentation and presentations.

**PO11: Project management and finance:** Demonstrate the ability to manage data-centric projects, integrating management principles and domain expertise to deliver quality results.

**PO12: Life-long Learning:** Commit to lifelong learning to adapt to emerging trends in data science, AI, and related fields, ensuring continual professional growth.

## **Program Specific Outcomes (PSOs)**

Graduates of the B.Sc. Data Science program will specifically be able to:

**PSO1: Advanced Analytical Skills:** Apply machine learning, artificial intelligence, and big data techniques to build predictive and prescriptive models for complex datasets.

**PSO2: Domain-Specific Knowledge:** Implement data science methodologies across domains such as healthcare, finance, marketing, and social sciences.

**PSO3: Project Development:** Design, execute, and manage data science projects, demonstrating expertise in handling large datasets, cloud platforms, and advanced programming tools.