

# Department of B.Sc. Computer Science and Machine Learning



*The B.Sc. Computer Science and Machine Learning program at Loyola Academy was established in the academic year 2023–24 with the aim of preparing students for the rapidly evolving field of Artificial Intelligence and Machine Learning, which is transforming industries worldwide. Machine Learning serves as the core foundation for becoming an AI Engineer, as it enables machines to learn from data, recognize patterns, and make intelligent decisions. The program emphasizes strong foundations in Statistics, Mathematics, and essential programming languages, enabling students to develop analytical and problem-solving skills required to build intelligent, data-driven systems.*

## Vision & Mission

### Vision:

*Our goal is to become a renowned global hub by providing outstanding education in the field of Artificial Intelligence and Machine Learning, thereby pushing our society to achieve new and innovative heights.*

### Mission:

- To provide students with education that is of high quality, skill oriented and focused on values in the area of Machine Learning.
- To develop the technical proficiency of students and nurture their creativity.
- Aim to determine industrial needs and advance the students area of expertise.
- To create a system of values that will have a positive effect on society.

### Courses Offered

#### **B.Sc. Computer Science and Machine Learning (3 years) Curriculum**

- Strong Mathematical & Statistical Foundations
- Programming Proficiency in Python and Java
- Core Computer Science Fundamentals
- Comprehensive Machine Learning & Artificial Intelligence
- Advanced AI Specializations

### Unique Features of Our Program

- Integrated Data Science + AI Curriculum
- Early Introduction to Machine Learning
- Strong Mathematical Backbone for AI
- Multi-Programming Skill Development
- Industry-Oriented Tools & Platforms
- Specialization Through Flexible Electives

### Admission Guidelines

### Career Opportunities

- Machine Learning Engineer
- Data Scientist
- Data Analyst
- AI Engineer
- Software Developer
- Python Developer etc.

### Higher Education Prospects

- M.Sc. (Big Data Analytics, Data Science, Information Technology, Computer Science)
- MCA (Master of Computer Applications)
- PG Diploma in Artificial Intelligence and Machine Learning
- MBA (Any Allied Program)

**Candidates must have completed 10+2 (Intermediate) with a minimum of 60% in MPC/MEC.**

### Why Loyola Academy?

- NAAC Accredited and recognized for academic excellence.
- Strong industry connections ensuring top-notch placements.
- Innovation-driven approach with a focus on emerging technologies.





# B.Sc. Computer Science and Machine Learning

SEM 1

SEM 2

SEM 3

SEM 4

SEM 5

SEM 6

## SUBJECTS

- English -I
- Value Education
- Programming for Problem Solving Using Python
- Operating System
- Differential and Vector Calculus
- Fundamentals of Web Technologies

## SUBJECTS

- English -II
- Indian Heritage and Culture
- Matrix Algebra & Number Theory
- Data Structures & Algorithms using Python
- Descriptive Statistics & Probability Distributions
- Computer Networks
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## SUBJECTS

- English -III
- Environmental Studies & Gender Sanitization
- Introduction to ML
- Statistical Methods and Inference
- Database Management System
- Design and Analysis of Algorithms
- Artificial Intelligence

## SUBJECTS

- English -IV
- Java Programming
- Machine Learning
- Deep Learning with Python
- Optimization Theory
- Power BI

## SUBJECTS

- Software Engineering
- Natural Language Processing
- Deep Learning
- Data Mining / Cyber Security (Elective)
- Cloud Computing/ Internet Of Things (Elective)
- Quantum Computing

## SUBJECTS

- Advanced AI / Generative AI (Elective)
- Big Data Analytics / MLOps (Elective)
- Computer Vision
- Major Project
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## EXTRA CURRICULAR ACTIVITIES

- SPORTS
- AICUF
- MAGIC YOUTH
- NCC
- NSS
- RESONANCE

## STUDENT SUPPORT

- ACADEMIC COUNSELING
- MENTORING
- GENERIC ELECTIVE
- SELF STUDY

## NON-CGPA COURSES

- PLANET
- NPTEL
- BRIDGE COURSES

## STUDENT CENTRIC METHODS

- MINOR PROJECTS
- INTERNSHIPS
- RESEARCH PAPERS
- POSTER PRESENTATIONS
- GROUP DISCUSSIONS
- SEMINARS/DEBATES