



Data Analytics, Machine Learning & Generative AI Certification Course

Duration: 6 Months (200+ Hours)

Curriculum



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ABOUT THE IOT ACADEMY

The IoT Academy, established in 2017 is a fast emerging company imparting quality programs for skills training, internship and guidance in cutting edge technologies like Data Science, Machine Learning, Artificial Intelligence, Internet of Things, Embedded Systems & many more and focused on helping people develop the skills they need to thrive in the rapidly growing digital economy.

The IoT Academy has collaborated with various premier institutes e.g. EICT Academy, IIT-Guwahati, IIT-Roorkee and IIT-Kanpur for Advance Certification courses to provide outcome-centric solutions to help them achieve their professional goals



**YOU
DREAM IT**
and We Make It Happen

OUR ACADEMIC PARTNERS



E&ICT Academy
IIT Guwahati



E&ICT Academy
IIT Roorkee



E&ICT Academy
IIT Kanpur



IIT Jodhpur



E&ICT Academy
NIT Patna



RFRF
Foundation



ASTU
Guwahati



IIT Bhilai



Himachal Pradesh
University



ABES
Engineering College



ABESEC
College



MSIT
College



IPEC
College

ABOUT THE PROGRAM

Many recent technological advancements around you incorporate elements of Data Science, Machine Learning, and Artificial Intelligence.

This comprehensive self paced program in Data Analytics, Machine Learning, and Generative AI provides an integrated learning experience for individuals looking to master these key areas of technology.

The course typically covers essential data analytics techniques, including data collection, preprocessing, and visualization, followed by an in-depth exploration of machine learning algorithms such as supervised, unsupervised, and reinforcement learning.

It introduces students to statistical modeling and regression analysis ensuring they understand how to create predictive models and extract insights from large datasets.

A significant focus is also placed on Generative AI, with topics covering prompt engineering, explainable AI and the practical application of AI for content creation, such as text, image, and video generation.

The program blends theory with hands-on projects to equip students with both the technical knowledge and practical skills required to tackle real-world problems in the fields of data science and artificial intelligence.



Duration

Total Duration of This Program is
6 Months.



Eligibility

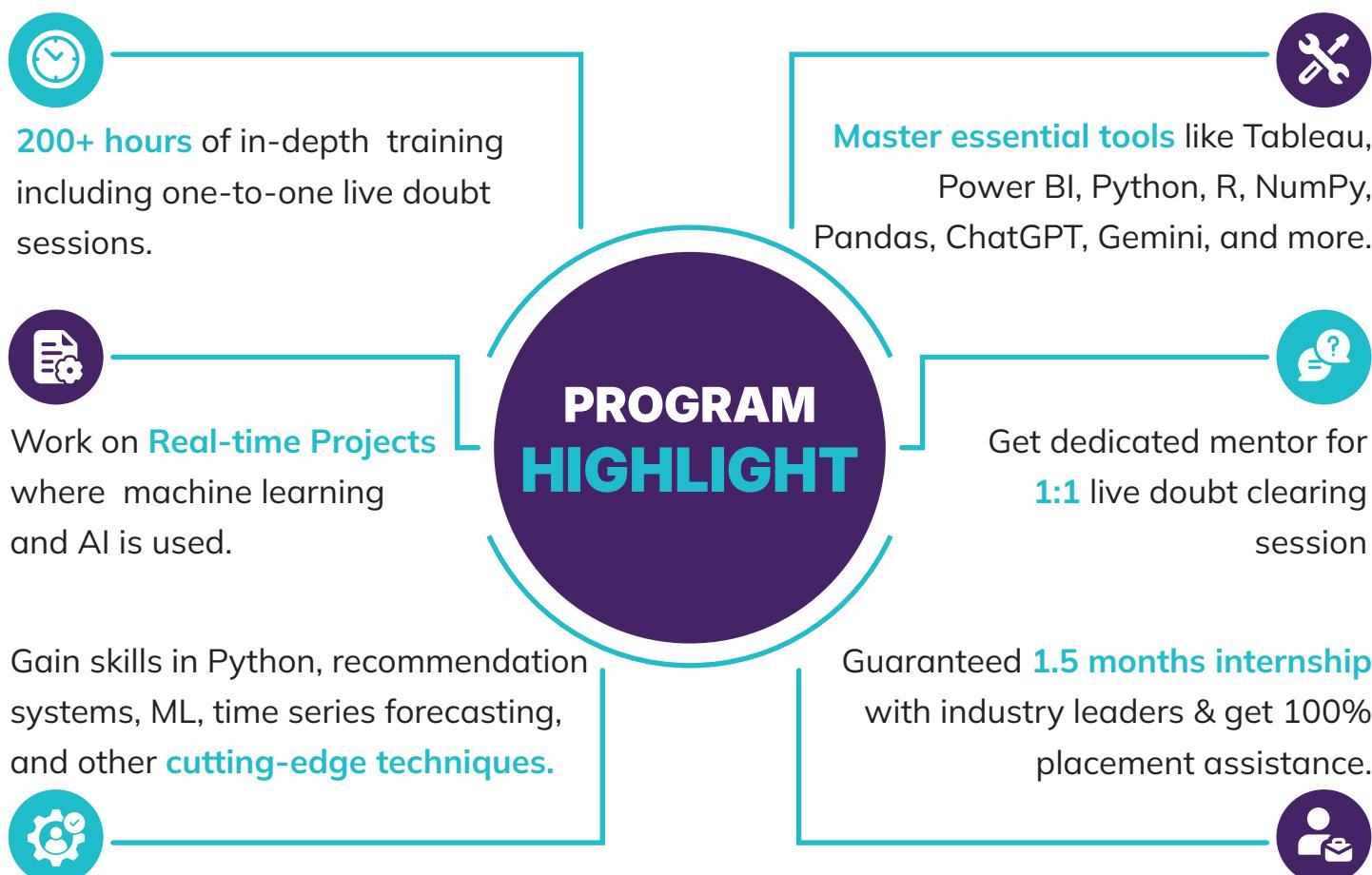
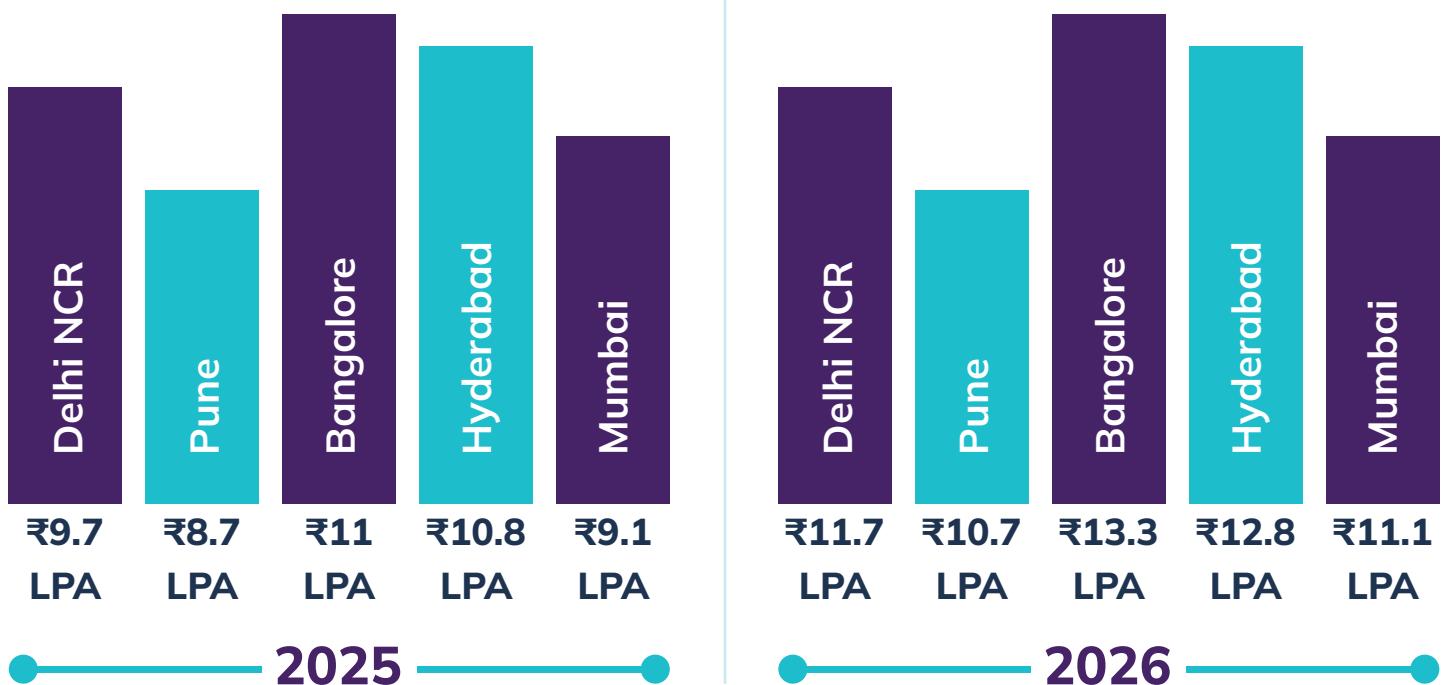
- Graduate or Graduation Appearing.
- Non-Technical Can Also Apply.



Who is it Ideal for?

- Business Professionals who want to make data-driven decisions.
- Recent Graduates seeking to start a career in data analytics or machine learning.
- Career Changers interested in transitioning to the rapidly growing fields of data science, analytics, and AI.
- Data Analysts looking to advance their skills.

CURRENT SALARY AND SCOPE



COURSE

CURRICULUM

Data Analytics, Data Science & Visualization with Python

Module 1: Python Basics

- ▶ What is Python
- ▶ Application of Python
- ▶ Why use Python for AI-ML
- ▶ Installation Anaconda/Other Idle
- ▶ Python Tokens
- ▶ Data Types in Python
- ▶ Conditional Statement
- ▶ Loops in Python
- ▶ Functions in Python
- ▶ Advance Functions
- ▶ File Handling

Module 2: Python NumPy & Pandas

- ▶ Introduction to NumPy
- ▶ Exploring a NumPy Array
- ▶ Indexing & Slicing a NumPy Array
- ▶ Manipulating a NumPy Array
- ▶ Performing Mathematical & Statistical Functions using NumPy
- ▶ Performing Linear Algebra Operations using NumPy
- ▶ Introduction to Pandas
- ▶ Exploring Pandas Series
- ▶ Introduction to Pandas DataFrame
- ▶ Importing & Exporting Data
- ▶ Implementing basic DataFrame functionalities
- ▶ Exploring Descriptive Statistics with Pandas

Module 3: R Language Essentials

- ▶ Fundamentals of R
- ▶ Vectors & control statements
- ▶ Functions in R
- ▶ Matrices & strings
- ▶ Lists & arrays in R
- ▶ Data visualization in R

Module 4: EDA

- ▶ Data Types
- ▶ Dispersion & Skewness
- ▶ Data imputation
- ▶ Data Pre-processing
- ▶ Data Cleaning
- ▶ Data Manipulation
- ▶ Advanced Manipulation

Module 05: SQL For Data Analytics

- ▶ SQL Basic
- ▶ SQL Joins
- ▶ SQL Aggregations
- ▶ Subqueries and Temp Tables
- ▶ SQL Data Cleaning
- ▶ Window Functions

COURSE

CURRICULUM

Module 6: Data Visualization

- ▶ Why Data Visualization?
- ▶ Introduction to Data Visualization
- ▶ Libraries & Tools for Data Visualization in Python
- ▶ Static Data Visualization Using Seaborn
- ▶ Interactive Data Visualization Using Plotly Express
- ▶ Interactive Animations & Facet Plots

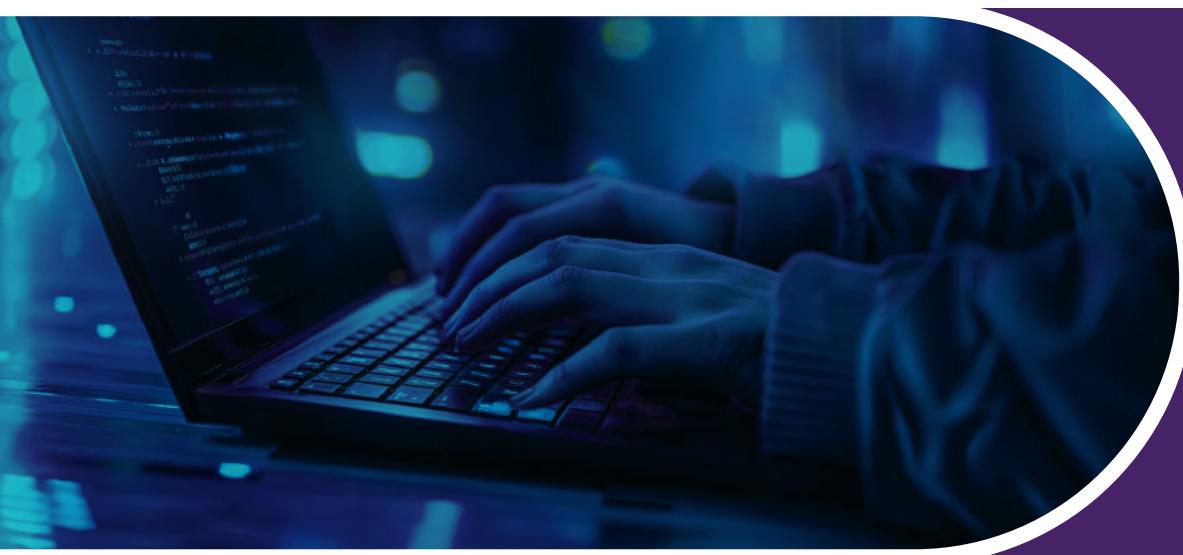
Module 7: Python NumPy & Pandas

- ▶ Understanding Data
- ▶ Creating Your First visualization
- ▶ Tableau Calculations
- ▶ Formatting Visualizations
- ▶ Manipulating Data in Tableau
- ▶ Creating Dashboards AND Stories
- ▶ Distributing & Publishing Your Visualization

Module 8: Visual Storytelling using Power BI

- ▶ Understanding Data
- ▶ Creating Your First visualization
- ▶ Tableau Calculations
- ▶ Formatting Visualizations
- ▶ Manipulating Data in Tableau
- ▶ Creating Dashboards AND Stories
- ▶ Distributing & Publishing Your Visualization

Capstone Project 1



COURSE CURRICULUM

Applied Maths, Statistics and Probability for DS & ML

Module 1: Mathematics for Machine Learning

- ⦿ Linear Algebra
- ⦿ Introduction to Calculus
- ⦿ Multivariable Calculus

Module 2: Statistical Foundations

- ⦿ Applications of Statistics
- ⦿ Introduction to Statistics
- ⦿ Categories of Data
- ⦿ Basic Terminologies in Statistics
- ⦿ Sampling techniques
- ⦿ Descriptive Statistics
- ⦿ Measure Used in Descriptive Statistics
- ⦿ Z-Scores

Module 3: Probability

- ⦿ What is Probability?
- ⦿ Rules of Probability
- ⦿ Types of Probability
- ⦿ Random Variables
- ⦿ Probability Distribution Functions

Module 4: Inferential Statistics

- ⦿ Introduction to Inferential Statistics
- ⦿ Hypothesis Testing
- ⦿ Normal Distribution
- ⦿ P-value
- ⦿ One-tailed and Two-tailed tests
- ⦿ One Sample Z test
- ⦿ One Sample T test
- ⦿ Independent Sample T test
- ⦿ Chi-square test
- ⦿ ANOVA

Capstone Project 2



COURSE

CURRICULUM

Machine Learning Specialization

Module 1: Introduction to Machine Learning

- ▶ What is Machine Learning?
- ▶ Applications of Machine Learning
- ▶ Machine Learning in your daily life
- ▶ Machine Learning in Retail
- ▶ Steps Involved in Machine Learning

Module 2: Regression

- ▶ Introduction to Regression
- ▶ Linear Regression
- ▶ Evaluation Metrics in Regression Models
- ▶ Logistic Regression

Module 3: Unsupervised Learning

- ▶ What is Unsupervised Learning?
- ▶ Application of Unsupervised Learning
- ▶ Introduction to Clustering
- ▶ Types of Clustering
- ▶ Partitioning Methods: K-means,
- ▶ DBSCAN, Spectral
- ▶ Hierarchical Methods: Hierarchical

Capstone Project 3

Module 4: Supervised Classification

- ▶ Why Use Classification?
- ▶ Application of Classification Algorithms
- ▶ Introduction to Classification
- ▶ Types of Classification Algorithms
- ▶ Classification: Decision Tree
- ▶ Classification: Random Forest
- ▶ ML in Banking & Finance - Benefits
- ▶ Classification: SVM
- ▶ Classification: KNN
- ▶ Classification: Naïve Bayes
- ▶ Evaluating Classification Models
- ▶ Model Optimization Techniques
- ▶ Model Boosting Techniques
- ▶ Introduction to PyCaret
- ▶ Dealing with Unbalanced Datasets

Module 5: Dimension Reduction

- ▶ PCA
- ▶ Factor Analysis
- ▶ LDA

Module 6: Association Rules Mining

- ▶ What are Association Rules?
- ▶ Association Rule Parameters
- ▶ A-priori Algorithm
- ▶ Market Basket Analysis

COURSE

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Module 7: Time-series Forecasting

- Introduction to forecasting data
- Properties of Time Series data
- Features of Time Series data
- Markov Processes - Overview and Terminologies
- Naive, Average and Moving Average
- Forecasting
- Exponential Smoothing
- ARIMA Approach

Module 8: Recommendation System

- What is a Recommendation System?
- Need for a Recommendation System
- Recommendation System Use Cases
- Applications of Recommendation System
- Types of Recommendation Systems
- Collaborative Filtering
- Content Based Filtering
- Matrix Factorization
- Pros and Cons of Collaborative Filtering
- Content Based filtering
- Hybrid Recommendation Systems

Module 9: Machine Learning Model Deployment

- Overview of Machine Learning Models
- Machine Learning System Architecture
- Research Environment
- Packaging, Serving and Deploying the model
- Differential Testing

Capstone Project 4



COURSE

CURRICULUM

Generative AI Specialization & ChatGPT, Prompt Engineering, Explainable AI

Module 1: Generative AI Specialization

- ▶ Introduction to Generative AI Models
- ▶ The Future of Generative AI
- ▶ Types of Generative AI Models
- ▶ Ethical Considerations in Generative AI Models & ChatGPT
- ▶ Popular Generative AI Models
- ▶ Benchmarking & Evaluating Models

Module 2: ChatGPT, Prompt Engineering, Explainable AI

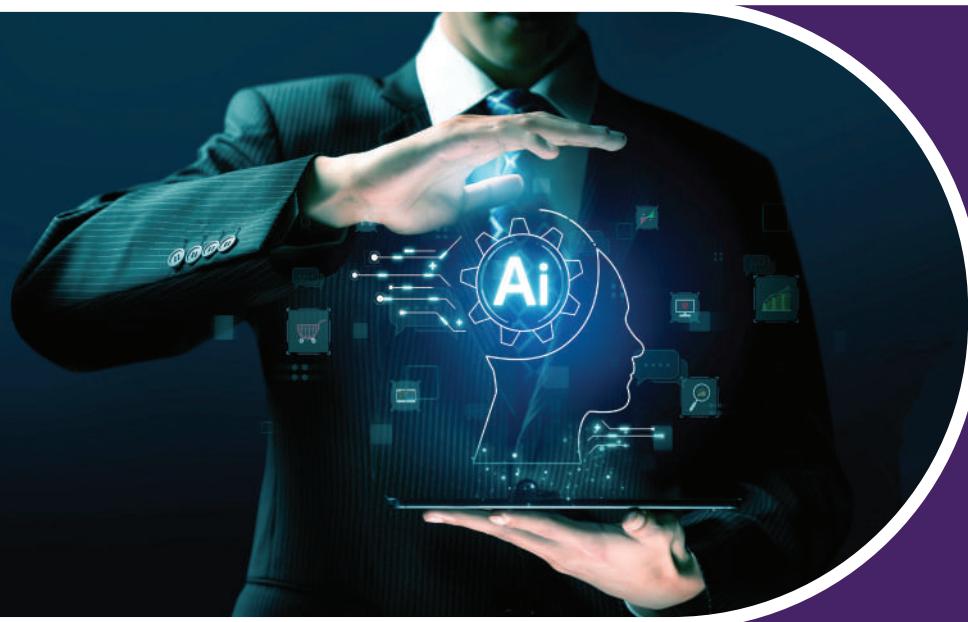
- ▶ ChatGPT
- ▶ Fine-tuning ChatGPT
- ▶ Deploying and Scaling ChatGPT
- ▶ Maintaining ChatGPT
- ▶ Security and Privacy Considerations
- ▶ Monitoring and Debugging ChatGPT

Explainable AI

Prompt Engineering

Advanced Prompt Engineering Techniques

Major Capstone Project



TOOLS & TECHNOLOGIES



NumPy

pandas



SQL

Gemini

ChatGPT

DALL·E

Power BI



SKILLS

YOU WILL MASTER

Python Programming
for DA & ML

R Programming for
DA & ML

Data Visualization with
Power BI & Tableau

SQL for DA & ML

Mathematics for ML

Statistics for ML

Probability for ML

Supervised Learning

Unsupervised Learning

Recommendation
System

Time-Series
Forecasting

Machine Learning Model
Deployment



Program Information:

Data Analytics, Machine Learning & Generative AI Certification Course

By The IoT Academy



VISIT WEBSITE

CONTACT US NOW

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