



## **Course Name: Data Science Program**

### **Course Overview**

Master the full spectrum of Data Science — from Python programming and SQL to machine learning, deep learning, and real-world model deployment. This 8-month Data Science Program by Tech Learniversity and Tech Vista Code is designed to transform absolute beginners and aspiring professionals into industry-ready data experts. You'll learn to clean, analyze, visualize, and model data using modern tools like Pandas, NumPy, Power BI, TensorFlow, and AWS, while building a job-ready portfolio through hands-on projects. Whether you're a student, working professional, or career switcher, this program prepares you for high-growth roles in data analysis, machine learning, AI engineering, and business intelligence — with strong fundamentals, practical experience, and placement-focused training.

### **Course Type**

Mode: Online Live Instructor-led Training

### **Course Objectives**

By the end of this Advanced Data Science Program, you will:

- Build a strong foundation in Python, SQL, data structures, and algorithms to solve real-world data problems with confidence.
- Clean, analyze, and manipulate large datasets using industry-standard libraries such as NumPy, Pandas, and Matplotlib.
- Apply core statistical concepts, probability, and hypothesis testing to make data-driven business decisions.
- Create compelling visualizations and interactive dashboards using Power BI, Tableau, and Python-based plotting tools.
- Develop, train, and evaluate machine learning models — including regression, classification, tree-based models, and ensemble techniques — for real business use cases.
- Build advanced deep learning solutions using TensorFlow and PyTorch, covering neural networks, CNNs, NLP, and transformer-based architectures.
- Deploy end-to-end data science and AI applications using Flask, Streamlit, and cloud platforms like AWS.
- Use Git and GitHub for version control, collaboration, and professional project management.
- Build a strong portfolio with real-world projects in ML, DL, NLP, and data analysis to showcase your skills to employers.



– Become fully job-ready with resume building, mock interviews, and placement-focused training for roles in Data Analysis, Machine Learning, AI Engineering, Business Intelligence, and Data Science across industries.

### **Duration**

300 Hours

### **Requirements**

- A laptop or PC with at least 8GB RAM (16GB recommended for machine learning and deep learning modules)
- Windows, macOS, or Linux operating system
- A stable internet connection for live sessions, project work, and cloud tools
- Basic familiarity with computers, file management, and web browsing
- No prior coding experience required — the program starts from fundamentals

### **Pre-requisites**

- Basic understanding of computers, internet usage, and file management
- Curiosity for solving problems and working with data
- No prior programming or technical background required — the program starts from zero
- Willingness to practice consistently and work on hands-on projects

### **Target Audience**

This program is ideal for:

- Aspiring Data Analysts, Machine Learning Engineers, and Data Scientists looking to build strong, industry-ready skills
- Working professionals in IT, software, analytics, finance, marketing, or operations who want to transition into data-driven roles
- Students and fresh graduates aiming to enter high-growth careers in AI, ML, and data science
- Career changers from non-technical backgrounds who want a structured, beginner-friendly path into tech
- Business Analysts & BI professionals seeking deeper technical expertise in Python, SQL, ML, and visualization
- Engineers (CS, IT, ECE, Mechanical, Civil) wanting to upskill for data-centric roles



- Entrepreneurs & startup founders who want to build AI-powered products or understand data-driven decision-making
- Freelancers planning to offer data analysis, ML model building, or dashboard development services
- Anyone passionate about solving real-world problems using data, automation, and AI

### **Career and Future Prospects**

Data Science, Machine Learning, and AI professionals are among the most in-demand talent across the global tech ecosystem. Successful learners of this program can work as:

- Data Analyst
- Machine Learning Engineer
- Data Scientist
- Business Intelligence Analyst
- AI/ML Research Assistant
- Python Developer (Data Focused)
- NLP Engineer
- Deep Learning Engineer
- Data Engineer (Entry-Level)
- Freelance Data Consultant / Dashboard Developer

### **Industries hiring:**

IT Services, FinTech, Banking & Finance, Healthcare, Retail, E-Commerce, Manufacturing, EdTech, Consulting, Logistics, Media, and AI-driven startups.

With strong fundamentals, hands-on projects, and deployment skills, graduates of this program are well-positioned for high-growth careers in the rapidly expanding fields of Data Science, AI, and Machine Learning.

### **Designation/Title**

- Data Analyst – Python, SQL & BI
- Machine Learning Engineer (Entry to Mid-Level)
- Data Scientist – ML & AI
- Business Intelligence Analyst / BI Developer



- Deep Learning / NLP Engineer
- Junior Data Engineer
- AI/ML Research Assistant
- Python Developer – Data & Automation
- Freelance Data Scientist / ML Model Developer
- Dashboard & Analytics Consultant

### **Projects**

Month 1: Python Foundations

Project: Student Record System (File Handling)

Build a mini-application that stores, updates, and retrieves student information using Python functions, loops, and file operations. Data is saved in text/CSV files to simulate real-world record management.

Month 2: Advanced Python + DSA + SQL

Project: Library Management System (Python + SQL)

Create a functional library system where users can add books, issue/return books, and manage members. This integrates Python with SQL databases using CRUD operations and joins.

Month 3: Data Analysis (NumPy + Pandas)

Project: Sales Data Analysis

Work with real-world sales datasets to:

- Identify top-selling products
- Analyze monthly revenue trends
- Perform data cleaning, transformation, and exploratory analysis using Pandas & NumPy

Month 4: Statistics + Visualization

Project: Customer Dashboard (Power BI / Tableau)

Design an interactive dashboard that visualizes customer behavior, KPIs, and business insights using BI tools. Includes charts, filters, and drill-downs for decision-making.

Month 5: Machine Learning (Core)

Project: House Price Prediction (Regression Model)



Build a machine learning model using Linear & Multiple Regression to predict house prices based on features like size, location, and amenities. Includes feature engineering and model evaluation.

Month 6: Advanced Machine Learning

(No dedicated project listed in the syllabus, but modules prepare you for ML classification tasks.)

You will apply classification algorithms (Logistic Regression, KNN, SVM), tree models, and imbalance handling techniques on datasets such as:

- Spam vs Not Spam
- Customer churn
- Fraud detection

Month 7: Deep Learning + NLP

Project: Image Classifier (CNN)

Train a Convolutional Neural Network using TensorFlow/PyTorch to classify images (e.g., digits, animals, products). Includes convolution layers, pooling, and evaluation.

Month 8: Deployment + Industry Readiness

Project: End-to-End Model Deployment (Flask / Streamlit + Cloud)

Deploy a machine learning model as a live web application using Flask or Streamlit, and host it on AWS (EC2/S3).

This includes:

- Frontend UI
- Backend model integration
- Cloud deployment
- Git/GitHub version control

Placement Portfolio Project

Create a complete, industry-ready portfolio including:

- GitHub repositories
- Dashboards
- ML/DL models
- Deployment projects



– Resume + mock interview preparation

### **Salary**

India

Entry-Level (0–2 years): ₹4,00,000 – ₹8,00,000 per year

Mid-Level (2–5 years): ₹8,00,000 – ₹18,00,000 per year

Senior (5+ years): ₹18,00,000 – ₹35,00,000+ per year

USA

Entry-Level: \$70,000 – \$110,000 per year

Mid-Level: \$110,000 – \$150,000 per year

Senior: \$150,000 – \$200,000+ per year

Canada

Entry-Level: CAD \$60,000 – \$85,000 per year

Mid-Level: CAD \$85,000 – \$120,000 per year

Senior: CAD \$120,000 – \$150,000+ per year

UK

Entry-Level: £30,000 – £45,000 per year

Mid-Level: £45,000 – £70,000 per year

Senior: £70,000 – £100,000+ per year

Australia

Entry-Level: AUD \$70,000 – \$95,000 per year

Mid-Level: AUD \$95,000 – \$130,000 per year

Senior: AUD \$130,000 – \$160,000+ per year

### **Features**

- Real Industry Projects across Python, SQL, Machine Learning, Deep Learning, and Deployment
- Live Instructor-Led Training Sessions with lifetime access to recordings
- Hands-on Labs using Python, Pandas, NumPy, Power BI, TensorFlow, PyTorch & AWS
- 8-Month Structured Curriculum covering 40+ tools, libraries, and real-world workflows



- Interactive Dashboards & ML Models built as part of your portfolio
- End-to-End Model Deployment using Flask, Streamlit & Cloud Platforms
- Git & GitHub Version Control Training for professional project management
- Placement-Focused Preparation including resume building, mock interviews & portfolio creation
- Startup & Freelance Mindset Training to help you build independent projects and client-ready solutions
- ISO 9001:2015 Certified Training Quality (if applicable to your institution)

### **Benefits**

- Earn a co-branded, globally recognized Certificate of Completion from Tech Learniversity and Tech Vista Code
- Build a job-ready portfolio with real-world projects in Python, SQL, ML, Deep Learning, NLP, and Deployment
- Learn directly from industry practitioners, data scientists, and certified trainers
- Gain hands-on experience with tools used by top companies: Python, Pandas, Power BI, TensorFlow, PyTorch, AWS, GitHub
- Become confident in building ML models, dashboards, and AI applications that solve real business problems
- Access lifetime course materials, session recordings, and project files
- Boost your career prospects in Data Science, Machine Learning, AI, Business Intelligence, and Analytics
- Develop a startup and freelance-ready mindset to build independent projects or client solutions
- Receive placement-focused support including resume building, mock interviews, and portfolio guidance

### **The Results**

Become a skilled Data Science professional capable of turning raw data into powerful insights, predictive models, and AI-driven solutions.

Earn a globally recognized certification and stand out to top companies hiring for Data Analyst, ML Engineer, and Data Scientist roles.

Showcase a professional portfolio of dashboards, ML models, deep learning projects, and deployed applications on GitHub and LinkedIn to impress recruiters.

## Syllabus

### Month 1: Python Foundations (Strong Base Building)

#### Module 1. Introduction to Programming

##### Concepts:

- What is programming?
- How software works (Input → Process → Output)
- Compilation vs Interpretation

##### Real-world:

- ATM machine → Input (PIN) → Process (verify) → Output (cash)

#### Module 2. Python Basics

##### Topics:

- Variables & Data Types (int, float, string, boolean)
- Type conversion
- Input/Output functions

##### Practicals:

- Take user input and calculate age  
Temperature converter

#### Module 3. Control Flow

##### Topics:

- if, elif, else
- Nested conditions
- Logical operators (AND, OR, NOT)

##### Real-world:

- Loan approval system

#### Module 4. Loops

##### Topics:

- for loop



- while loop
- break, continue, pass

Practicals:

- Print patterns
- Multiplication tables

Module 5. Data Structures

Topics:

- List (mutable)
- Tuple (immutable)
- Dictionary (key-value)
- Set (unique values)

Practicals:

- Store student marks
- Remove duplicates

Module 6. Functions

Topics:

- Function creation
- Parameters & return
- Default arguments

Practicals:

- Calculator using functions

Module 7. File Handling

Topics:

- Read/write files
- CSV handling

Project:

- Student Record System (save data in file)

## Month 2: Advanced Python + DSA + SQL

### Module 1. Advanced Python

#### Topics:

- Lambda functions
- map(), filter()
- List comprehensions

#### Real-world:

- Filter customers with salary > 50k

### Module 2. OOP (Object-Oriented Programming)

#### Topics:

- Class & Object
- Inheritance
- Encapsulation
- Polymorphism

#### Practicals:

- Bank system simulation

### Module 3. DSA Basics

#### Topics:

- Searching (Linear, Binary)
- Sorting (Bubble, Merge)
- Time Complexity (Big-O)

#### Real-world:

- Google search → optimized search algorithm

### Module 4. SQL Basics

#### Topics:

- Database & Tables
- SELECT, INSERT, UPDATE, DELETE

- WHERE, ORDER BY

#### Module 5. SQL Advanced

##### Topics:

- Joins (Inner, Left, Right)
- Group By, Having
- Subqueries

##### Project:

- Library Management System (Python + SQL)

#### **Month 3: Data Analysis (NumPy + Pandas)**

##### Module 1. NumPy

##### Topics:

- Arrays
- Vector operations
- Broadcasting

##### Real-world:

- Image = matrix of pixels

##### Module 2. Pandas Basics

##### Topics:

- Series & DataFrame
- Reading CSV, Excel
- Indexing & Filtering

##### Module 3. Data Cleaning

##### Topics:

- Handling missing values
- Duplicate removal
- Data formatting

##### Real-world:

- Customer database with missing phone numbers

#### Module 4. Data Transformation

##### Topics:

- GroupBy
- Merge & Join
- Pivot tables

##### Project:

- Sales Data Analysis
- Find top-selling products  
Monthly revenue

#### **Month 4: Statistics + Visualization**

##### Module 1. Probability

##### Topics:

- Sample space
- Events
- Bayes Theorem

##### Real-world:

- Spam email detection probability

##### Module 2. Statistics

##### Topics:

- Mean, Median, Mode
- Variance, Standard Deviation
- Normal Distribution

##### Module 3. Hypothesis Testing

##### Topics:

- Null hypothesis
- p-value



- Confidence interval

Real-world:

- Testing new marketing strategy success

Module 4. Data Visualization

Tools:

- Matplotlib
- Seaborn

Charts:

- Bar, Line, Pie, Histogram  
Heatmap

Module 5. BI Tools

Topics:

- Power BI
- Tableau

Project:

- Customer Dashboard (interactive)

## **Month 5: Machine Learning (Core)**

Module 1. ML Introduction

Topics:

- Supervised vs Unsupervised
- Training vs Testing

Module 2. Regression

Topics:

- Linear Regression
- Multiple Regression

Real-world:

- Predict house price



### Module 3. Model Evaluation

#### Topics:

- MAE, MSE, RMSE
- $R^2$  score

### Module 4. Feature Engineering

#### Topics:

- Feature selection
- Scaling (Normalization)

#### Project:

- House Price Prediction

## **Month 6: Advanced Machine Learning**

### Module 1. Classification

#### Topics:

- Logistic Regression
- KNN
- SVM

#### Real-world:

- Spam vs Not Spam

### Module 2. Tree Models

#### Topics:

- Decision Trees
- Random Forest
- Gradient Boosting

### Module 3. Imbalanced Data

#### Topics:

- SMOTE
- Oversampling



## **Month 7: Deep Learning + NLP**

### Module 1. Neural Networks

#### Topics:

- Neuron
- Activation functions (ReLU, Sigmoid)
- Backpropagation

### Module 2. Deep Learning Frameworks

#### Tools:

- TensorFlow
- PyTorch

### Module 3. CNN (Computer Vision)

#### Topics:

- Image processing
- Convolution layers

#### Project:

- Image classifier

### Module 4. NLP

#### Topics:

- Tokenization
- Stopwords
- Sentiment Analysis

### Module 5. Transformers

#### Tools:

- Hugging Face

## **Month 8: Deployment + Industry Readiness**

### Module 1. Model Deployment



Tools:

- Flask
- Streamlit

Module 2. Cloud Basics

Topics:

- Amazon Web Services
- EC2, S3

Module 3. Version Control

Tools:

- Git
- GitHub

Module 5. Placement Training

- Resume building
- Mock interviews
- Portfolio creation