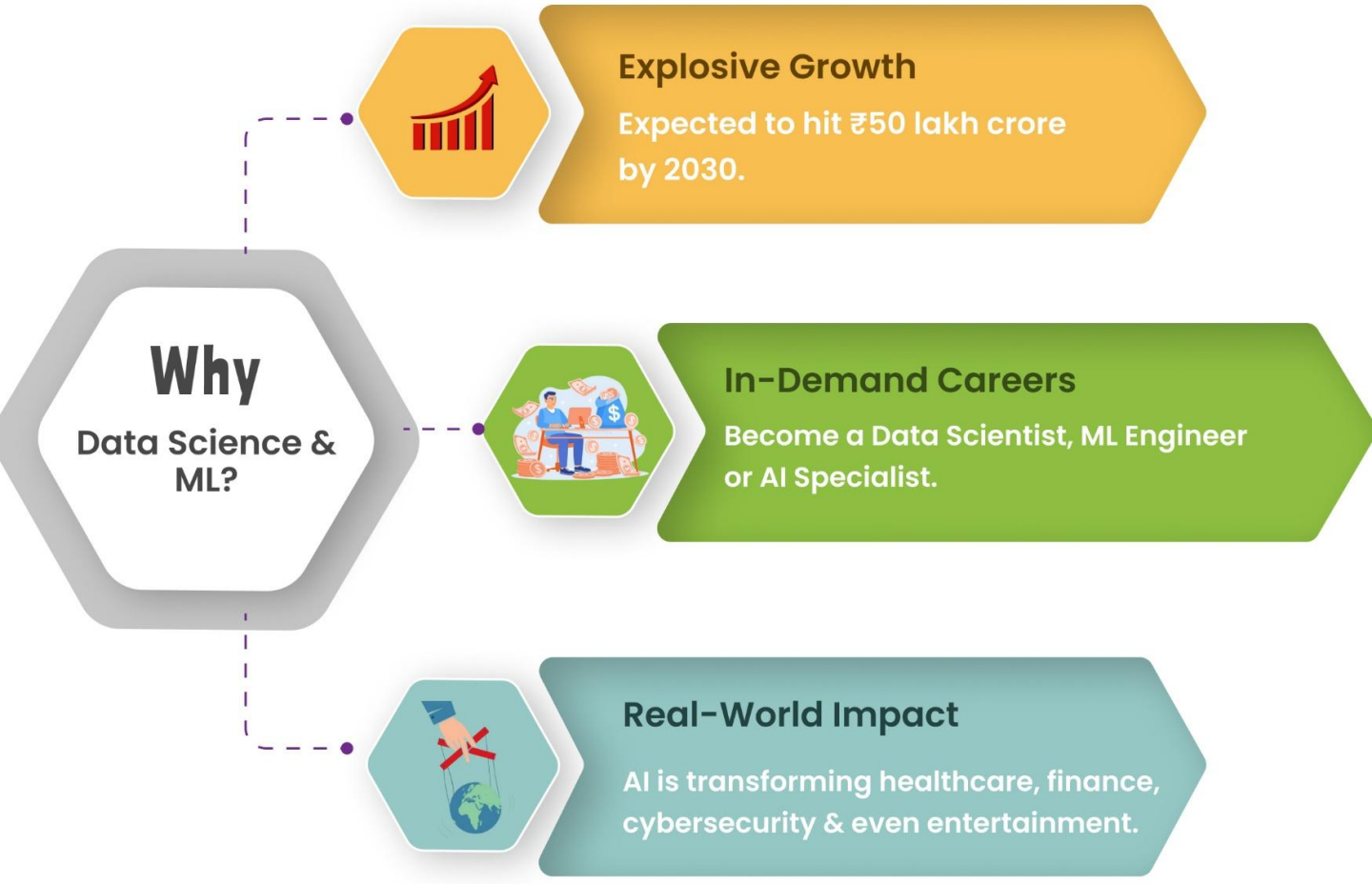
TeqCertify
Elevate Your Data Journey

# DATA SCIENCE & MACHINE LEARNING

# Why Data Science & ML?

How does **Google Translate understand languages,** or Spotify recommend songs you'll love? The answer is **Data Science and Machine Learning!** These fields power AI systems that predict trends, automate decisions, and generate creative content. From **self-driving cars to AI chatbots,** machine learning is shaping the future, and businesses are investing heavily in experts who can build these smart systems.



# Career Opportunities


Years of Experience

# Journey With TeqCertify

**Capstone Project**
Solving Real-World Problems with AI & ML

**Big Data & Cloud**
Managing Large-Scale Data Efficiently

**Machine Learning**
Teaching Machines to Learn & Predict

**Data Processing & Visualization**
Cleaning, Transforming & Exploring Data

**Statistics & SQL**
The Foundation of Data Mastery

**Data Science**
Unveiling Insights, Powering Decisions

# Path to your Dream Job


## Build a Standout Resume & Portfolio

01

Craft an ATS-friendly resume.
Highlight key skills & achievements.
Showcase your best projects & experience.

## Master Interview Skills

02

Learn how to answer tricky questions.
Improve communication & confidence.
Practice with mock interviews.

## Get Expert Feedback & Identify Gaps

03

Receive constructive feedback on interviews.
Understand areas that need improvement.
Make necessary revisions.

## Improve & Upskill

04

Gain new skills based on feedback.
Strengthen technical & problem-solving abilities.
Enhance communication & presentation skills.

## Land Your Dream Job

05

Negotiate salary & job offers smartly.
Secure the right job that fits your goals.
Get mentorship for long-term career growth.

# Why should you invest in the track?


## Predict the Future With Data Superpowers

Imagine a career where you decode hidden patterns, predict trends, and solve real-world problems—all using data! Data Science is your gateway to exciting opportunities in tech, finance, and healthcare. With great salaries, endless growth, and the power to shape the future, are you ready to explore this data-driven world?

# Syllabus Breakdown

Master the art of making data-driven decisions! This training takes you from fundamentals to building smart AI-powered solutions.

01 **Data Science Foundations**
Learn how data fuels AI and business insights.

02 **Math & Stats for AI**
Discover the magic of probability, statistics & algebra in AI.

03 **Data Wrangling & EDA**
Clean, transform, and visualize data like a pro.

04 **Machine Learning Models**
Build predictive models using regression, trees & ensembles.

05 **Model Optimization**
Improve accuracy with tuning and validation techniques.

06 **Big Data & Cloud**
Work with massive datasets using Hadoop, Spark & Google Cloud.

07 **Capstone Project**
Solve real-world problems in finance, healthcare, and retail.

# Track Curriculum

## Phase 1: Python & SQL Foundations (21 Modules)

### Python & SQL Foundations

Build strong coding and data query skills essential for a career in data science.

### Unit 1: Python for Data Science

Master Python syntax, control flow, functions, data structures, file handling, regular expressions, and object-oriented programming.

### Unit 2: Data Analysis with Python

Explore NumPy, Pandas, and Matplotlib for data manipulation, analysis, and visualization.

### Unit 3: SQL for Data Projects

Write complex SQL queries with joins, aggregations, subqueries, CTEs, and learn to connect Python with databases using SQLite & SQLAlchemy.

# Track Curriculum

## Phase 2: Statistics & Mathematics for Data Science (9 Modules)

**Statistics & Mathematics for Data Science**

Develop the quantitative foundation needed for machine learning and analytics.

**Unit 4: Descriptive & Inferential Statistics**

Understand mean, median, mode, standard deviation, hypothesis testing, p-values, and confidence intervals.

**Unit 5: Probability & Distributions**

Grasp concepts like Bayes' theorem, probability distributions, and statistical significance.

**Unit 6: Linear Algebra & Calculus for ML**

Learn matrices, vectors, derivatives, gradients, and optimization for machine learning models.

**Unit 7: Correlation & Covariance**

Understand the relationship between variables using statistical measures.

**Unit 8: Sampling & Central Limit Theorem**

Learn how sample data relates to population data and model assumptions.

**Unit 9: Statistical Testing Techniques**

Apply t-tests, chi-square tests, ANOVA, and other statistical techniques in real datasets.

**Unit 10: Matrix Operations for ML**

Apply dot products, eigenvalues/eigenvectors, and SVD in model computations.

**Unit 11: Differentiation & Cost Functions**

Explore gradient descent and loss functions in supervised learning.

**Unit 12: Probability in Machine Learning**

Link probabilistic reasoning to machine learning decision-making.

# Track Curriculum

## Phase 3: Data Wrangling & Visualization (6 Modules)

**Data Wrangling & Visualization**

Transform raw data into meaningful insights using advanced data techniques.

**Unit 13: Data Cleaning & Preprocessing**

Handle missing data, outliers, and perform encoding, normalization, and transformation.

**Unit 14: Feature Engineering**

Create new features, extract datetime values, and engineer meaningful inputs for models.

**Unit 15: Data Transformation Techniques**

Log transforms, binning, and discretization techniques for model-friendly data.

**Unit 16: Exploratory Data Analysis (EDA)**

Discover insights, distributions, and correlations through structured EDA.

**Unit 17: Data Visualization Techniques**

Create stunning plots using Matplotlib, Seaborn, and Plotly to uncover hidden patterns.

**Unit 18: Interactive Dashboards with Plotly & Streamlit**

Turn visual insights into shareable dashboards for stakeholders.

# Track Curriculum

## Phase 4: Machine Learning & Predictive Modeling (12 Modules)

**Machine Learning & Predictive Modeling**

Master the art of building predictive models using supervised and unsupervised learning.

**Unit 19: Supervised Learning Algorithms**

Explore Linear Regression, Logistic Regression, Decision Trees, Random Forests & Gradient Boosting.

**Unit 20: Unsupervised Learning & Clustering**

Learn K-means, Hierarchical Clustering, PCA, and anomaly detection.

**Unit 21: Model Evaluation & Tuning**

Apply cross-validation, confusion matrix, ROC-AUC, precision-recall, and hyperparameter tuning.

**Unit 22: Bias-Variance Tradeoff & Overfitting**

Understand generalization error, underfitting, and model complexity.

**Unit 23: Model Selection Strategies**

Compare models using validation scores, ensemble methods, and A/B testing.

**Unit 24: Decision Trees & Random Forests in Depth**

Dive deeper into tree-based models with pruning, feature importance, and bagging.

**Unit 25: Regularization Techniques**

Apply Lasso, Ridge, and ElasticNet to avoid overfitting in linear models.

**Unit 26: Gradient Boosting Frameworks**

Work with XGBoost, LightGBM, and CatBoost for high-performing models.

**Unit 27: Clustering Use Cases in Business**

Apply clustering to segment customers, detect fraud, or personalize services.

**Unit 28: Principal Component Analysis (PCA)**

Reduce dimensionality for visualization and efficiency.

**Unit 29: Model Deployment Basics**

Export and test models using Pickle, Joblib, and API endpoints.

**Unit 30: Ethics in ML & Data Privacy**

Understand fairness, accountability, and transparency in machine learning systems.

# Track Curriculum

## Phase 5: Advanced Topics & Tools (6 Modules)

**Advanced Topics & Tools**

Deepen your knowledge with real-world tools and next-level techniques.

**Unit 31: Time Series Analysis**

Forecast trends using ARIMA, SARIMA, and time-based features.

**Unit 32: Introduction to Deep Learning**

Get hands-on with neural networks, activation functions, and TensorFlow basics.

**Unit 33: Working with Big Data**

Understand Hadoop, Spark, and handling large datasets in distributed systems.

**Unit 34: Recommendation Systems**

Build collaborative and content-based filtering systems.

**Unit 35: Natural Language Processing Basics**

Tokenization, vectorization (TF-IDF, BoW), and sentiment analysis.

**Unit 36: Cloud Platforms for Data Science**

Use AWS, GCP, and Azure for scalable data workflows.

# Track Curriculum

## Phase 5: Real-Time Processing & Streaming Analytics (5 Modules)

**Real-Time Processing & Streaming Analytics**

Design systems that handle real-time events and stream processing at scale.

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**Unit 25: Streaming vs Batch Processing**

Compare architectures and use-cases for batch and real-time data.

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**Unit 26: Kafka for Real-Time Ingestion**

Produce and consume high-throughput streaming data with Kafka.

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**Unit 27: Apache Flink Basics**

Stream process events with Flink's powerful APIs.

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**Unit 28: Spark Structured Streaming**

Process and analyze structured streams in real time.

**Unit 29: Monitoring & Observability for Pipelines**

Set up logging, metrics, and alerts for production pipelines.

# Sample Projects

## Fraud Detection using Machine Learning

Developed a classification model to detect credit card fraud using transaction patterns, helping reduce false positives.

## Predictive Maintenance for Manufacturing

Used sensor data and ML models to predict machine failures, increasing operational uptime and reducing maintenance costs.

## Churn Prediction for Telecom

Built a logistic regression model to identify customers likely to churn, allowing proactive retention strategies.

## Sales Forecasting for Retail

Implemented time-series forecasting models to predict sales trends across categories, helping in demand planning.

# Few of our hiring partners

TATA ELECTRONICS

Henkel

amazon

TOYOTA

J.P.Morgan

accenture

AVEVA

Sangeetha mobiles.com

ALTIMETRIK

BANGALORE BIOINNOVATION CENTRE
Sculpting the Future of Bioinnovation

Pfizer

COLAN INFOTECH

GSK

Kmart

lululemon

virtusa
Accelerating Business Outcomes

Initiative

Tech Mahindra

TATA CONSULTANCY SERVICES

T2

Parents At Work

STYLE UNION
NEVER BLEND IN

LEVELAI

# Student Testimonials

Vinoth Kumar

Data Engineer

J.P.Morgan

Valli Raja Sekar

Sr. Data Scientist

TATA CONSULTANCY SERVICES

Rajashekaran

Sr. Data Analyst

accenture

Your Name

Your Role

You can be here

# Contact us

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