

# Data Science & Machine Learning Course



## Why Machine Learning Certifications ?

Machine learning is a subset of artificial intelligence that explains how software and application can become more efficient and effective in predicting outcomes without being programmed to derive the same. Machine learning teaches computers how to introduce new algorithms to their processing ability along with historical data in order to predict new output values.

## Training Solutions:

✓ Offline Classroom Instructor-Led Training in our labs or onsite Locations.

✓ Virtual Instructor-Led Training Via Virtual Video Conferencing Tools.

## Why Learners Prefer CLS as their Training Services provider ?

■ Premium Training Services Accredited from Global Technology Vendors.

■ Best Rated Experts & Certified Trainers in Egypt.

■ Official Training Hours, Practice Labs, Hands-on Learning.

■ CLS Training Classrooms are designed with High Edge PCs and Training Facilities.

■ Return on Training Investment is Guaranteed to boost performance.

## • Data Science & Machine Learning Course Outline :

### Introduction to Artificial Intelligence

- Decoding Artificial Intelligence
- Fundamentals of Machine Learning and Deep Learning
- Performance Metrics

### Statistics and Linear Algebra Basics

- Sample and population data?
- The fundamentals of descriptive statistics
- Measures of central tendency, asymmetry, and variability
- Practical example: descriptive statistics
- Distributions
- Estimators and estimates
- Confidence intervals: advanced topics

### Python for Data Science

- Python Basics
- Conditions and Loops.
- Python Functions.
- Python Recursion.
- Python Classes.
- Python Data Structures.
- Big O notation.
- Stacks, queues and dequeues.
- Variables, Lists, Tuple, Set, dictionaries.
- Working with Data in Python
- Read and Write data to files.
- Statistical Analysis and Business Applications
- Python Environment Setup and Essentials
- Mathematical Computing with Python (NumPy)
- Vectors and arrays.
- Matrix Multiplication and dot product.
- Matrix transpose and inverse matrix.
- Statistical operations on arrays.
- Web Scraping with BeautifulSoup.

### Machine Learning

- Introduction to Artificial Intelligence and Machine Learning
- Data Preprocessing:
  - Feature Scaling.
  - Missing Data.
  - Dummy Variable.
  - Imbalanced Data.
- Feature Engineering.
- Backward Elimination.
- Forward Elimination.
- Model Validation.
- Supervised Learning:
  - Linear Regression.
  - Logistic Regression.
  - Regression and Classification Metrics, Confusion Matrix, ROC & AUC.
- Ensemble Learning
- Decision Tree.
- Random Forest.
- Gradient Boost, XGBoost and LGBM
- Unsupervised learning
  - K-means Clustering.
  - Hierarchical Clustering.
  - Gaussian Mixture Model GMM.
  - Principle Component Analysis PCA.
- Recommender Systems
  - Content Based.
  - Knowledge Based.
  - Collaborative Filter Based.

## • Overview:

- Machine learning is making its way into a wide number of industries and businesses of all sizes, looking to accurately process information without designating specific resources to do the same as a result, professionals with coding ability around machine learning are widely sought after.
- These professionals are able to craft bespoke learning solutions for businesses allowing them to process the kind of information they need with pinpoint accuracy and heightened speed. Completing this training is ideal for professionals looking to cultivate more relevant coding skills.

## • Training:

- Building python programs including distribution, user-defined functions, importing datasets and more
- Manipulating and analyzing data using the Pandas library
- Visualizing data with Python libraries: Matplotlib, Seaborn and ggplot
- Building data distribution models: variance, standard deviation, interquartile range
- Calculating conditional probability via Hypothesis Testing
- Performing analysis of variance (ANOVA)
- Building linear regression models, evaluating model parameters and measuring performance metrics
- Using Dimensionality Reduction

## • Audience Profile :

### Who should enroll

- IT Professionals
- Technical Leads
- Programmers
- Software Developers
- Machine Learning Engineers
- Python Professionals
- Business Analysts
- Information Architects
- Analytics Managers
- Professionals looking to gain a thorough understanding of the Machine Learning with Python

## • Prerequisites:

- There are no prerequisites for this Machine Learning with Python course. However, professionals with prior knowledge of foundational python programming and statistics will have the upper hand when grasping concepts.
- The Machine Learning with Python training course teaches students the basics of machine learning using Python. The course introduces students to data exploration and allows them to discover a wide variety of machine learning approaches, including supervised learning, unsupervised learning, regression, classifications and more.
- The Machine Learning with Python course also encourages students to practice visualizing data using Python and built-in libraries, including Pandas, Matplotlib and Scikit.