

Artificial Intelligence, Machine Learning & Tableau

“Change is the end result of all true learning.”

ZebLearn is an ISO 9001-2015 Certified Company that is co-founded by highly experienced industry professionals and alumni of top universities. It is headquartered at Noida & It is one of the fastest-growing solution providers in the field of Education, IT, Consulting and Corporate Trainings.

Artificial Intelligence Syllabus

Artificial Intelligence Foundation

- ❖ Introduction To Artificial Intelligence (AI)
- ❖ AI Data Strategy
- ❖ AI Ethics
- ❖ Issues And Concerns
- ❖ AI Challenges
- ❖ Use Cases And Adoption

Tensorflow 2.X Platform

- ❖ Tensorflow Introduction
- ❖ Tensorflow Basic Concepts
- ❖ Installation And Basic Operations In Tf 2.X,Tf 2.0 Eager
- ❖ Mode, Tensorflow 2.X – Keras

Core Learning Algorithms

- ❖ Core Learning Algorithms Introduction
- ❖ Regression With Tensorflow
- ❖ Classification With Tensorflow

Neural Networks

- ❖ Structure Of Neural Networks,
- ❖ Neural Network - Core Concepts
- ❖ Feed Forward Algorithm
- ❖ Backpropagation
- ❖ Building Neural Network From Scratch Using Numpy



Artificial Intelligence Syllabus

Implementing Deep Neural Networks

- ❖ Introduction To Neural Networks With Tf2.X
- ❖ Simple Deep Learning Model In Keras (Tf2.X)
- ❖ Building Neural Network Model In Tf 2.0 For Mnist Dataset

Deep Computer Vision - Convolutional Neural Networks

- ❖ Convolutional Neural Networks (Cnns) Introduction
- ❖ Cnns With Keras
- ❖ Transfer Learning In Cnn
- ❖ Style Transfer, Flowers Dataset With Tf2.X
- ❖ Examining X-Ray With Cnn Model

Recurrent Neural Network

- ❖ Rnn Introduction
- ❖ Sequences With Rnns
- ❖ Long Short-Term Memory Networks (Lstm Rnns) And Gru
- ❖ Examples Of Rnn Applications

Natural Language Processing

- ❖ Natural Language Processing Introduction,
- ❖ NLP With Rnns
- ❖ Creating Model
- ❖ Transformers And Bert
- ❖ State Of Art Nlp And Projects



Artificial Intelligence Syllabus

Reinforcement Learning

- ❖ Markov Decision Process
- ❖ Fundamental Equations In R,
- ❖ Model Based Method
- ❖ Dynamic Programming Model Free Methods

Deep Reinforcement Learning

- ❖ Architectures Of Deep Q Learning
- ❖ Deep Q Learning
- ❖ Policy Gradient Methods

Generative Adversarial Network (Gan)

- ❖ Gan Introduction
- ❖ Core Concepts Of Gan
- ❖ Building Gan Model With Tensorflow 2.X
- ❖ Gan Applications



Machine Learning Syllabus

Introduction to Machine Learning

- ❖ Need of Machine Learning
- ❖ Introduction to Machine Learning
- ❖ Types of Machine Learning, such as supervised, unsupervised, and reinforcement learning, Machine Learning with Python, and the applications of Machine Learning

Supervised Learning and Linear Regression

- ❖ Introduction to supervised learning and the types of supervised learning, such as regression and classification
- ❖ Introduction to regression
- ❖ Simple linear regression
- ❖ Multiple linear regression and assumptions in linear regression
- ❖ Math behind linear regression

Classification and Logistic Regression

- ❖ Introduction to classification
- ❖ Linear regression vs logistic regression
- ❖ Math behind logistic regression, detailed formulas, the logit function and odds, confusion matrix and accuracy, true positive rate, false positive rate, and threshold evaluation with ROCR

Decision Tree and Random Forest

- ❖ Introduction to tree-based classification
- ❖ Understanding a decision tree, impurity function, entropy, and understanding the concept of information gain for the right split of node
- ❖ Understanding the concepts of information gain, impurity function, Gini index, overfitting, pruning, pre-pruning, post-pruning, and cost-complexity pruning
- ❖ Introduction to ensemble techniques, bagging, and random forests and finding out the right number of trees required in a random forest



Machine Learning Syllabus

Naïve Bayes and Support Vector Machine (self-paced)

- ❖ Introduction to probabilistic classifiers
- ❖ Understanding Naïve Bayes and math behind the Bayes theorem
- ❖ Understanding a support vector machine (SVM)
- ❖ Kernel functions in SVM and math behind SVM

Unsupervised Learning

- ❖ Types of unsupervised learning, such as clustering and dimensionality reduction, and the types of clustering
- ❖ Introduction to k-means clustering
- ❖ Math behind k-means
- ❖ Dimensionality reduction with PCA

Natural Language Processing and Text Mining (self-paced)

- ❖ Introduction to Natural Language Processing (NLP)
- ❖ Introduction to text mining
- ❖ Importance and applications of text mining
- ❖ How NLP works with text mining
- ❖ Writing and reading to word files
- ❖ Language Toolkit (NLTK) environment
- ❖ Text mining: Its cleaning, pre-processing, and text classification

Natural Language Processing and Text Mining (self-paced)

- ❖ Introduction to Natural Language Processing (NLP)
- ❖ Introduction to text mining
- ❖ Importance and applications of text mining
- ❖ How NLP works with text mining
- ❖ Writing and reading to word files
- ❖ Language Toolkit (NLTK) environment
- ❖ Text mining: Its cleaning, pre-processing, and text classification



Machine Learning Syllabus

Introduction to Deep Learning

- ❖ Introduction to Deep Learning with neural networks
- ❖ Biological neural networks vs artificial neural networks
- ❖ Understanding perception learning algorithm, introduction to Deep Learning frameworks, and TensorFlow constants, variables, and place-holders

Time Series Analysis (self-paced)

- ❖ What is time series? Its techniques and applications
- ❖ Time series components
- ❖ Moving average, smoothing techniques, and exponential smoothing
- ❖ Univariate time series models
- ❖ Multivariate time series analysis
- ❖ ARIMA model and time series in Python
- ❖ Sentiment analysis in Python (Twitter sentiment analysis) and text analysis



Tableau Syllabus

Introduction to Data Visualization and Power of Tableau

- ❖ What is data visualization?
- ❖ Comparison and benefits against reading raw numbers
- ❖ Real use cases from various business domains
- ❖ Some quick and powerful examples using Tableau without going into the technical details of Tableau
- ❖ Installing Tableau
- ❖ Tableau interface
- ❖ Connecting to Data Source
- ❖ Tableau data types
- ❖ Data preparation

Architecture of Tableau

- ❖ Installation of Tableau Desktop
- ❖ Architecture of Tableau
- ❖ Interface of Tableau (Layout, Toolbars, Data Pane, Analytics Pane, etc.)
- ❖ How to start with Tableau
- ❖ The ways to share and export the work done in Tableau

Hands-on Exercise:

- ❖ Play with Tableau desktop
- ❖ Learn about the interface
- ❖ Share and export existing works

Working with Metadata and Data Blending

- ❖ Connection to Excel
- ❖ Cubes and PDFs
- ❖ Management of metadata and extracts
- ❖ Data preparation
- ❖ Joins (Left, Right, Inner, and Outer) and Union



Tableau Syllabus

- ❖ Dealing with NULL values, cross-database joining, data extraction, data blending, refresh extraction, incremental extraction, how to build extract, etc.

Hands-on Exercise:

- ❖ Connect to Excel sheet to import data
- ❖ Use metadata and extracts
- ❖ Manage NULL values
- ❖ Clean up data before using
- ❖ Perform the join techniques
- ❖ Execute data blending from multiple sources

Creation of Sets

- ❖ Mark, highlight, sort, group, and use sets (creating and editing sets, IN/OUT, sets in hierarchies)
- ❖ Constant sets
- ❖ Computed sets, bins, etc.

Hands-on Exercise:

- ❖ Use marks to create and edit sets
- ❖ Highlight the desired items
- ❖ Make groups
- ❖ Apply sorting on results
- ❖ Make hierarchies among the created sets



Tableau Syllabus

Working with Filters

- ❖ Filters (addition and removal)
- ❖ Filtering continuous dates, dimensions, and measures
- ❖ Interactive filters, marks card, and hierarchies
- ❖ How to create folders in Tableau
- ❖ Sorting in Tableau
- ❖ Types of sorting
- ❖ Filtering in Tableau
- ❖ Types of filters
- ❖ Filtering the order of operations

Hands-on Exercise:

- ❖ Use the data set by date/dimensions/measures to add a filter
- ❖ Use interactive filter to view the data
- ❖ Customize/remove filters to view the result

Organizing Data and Visual Analytics

- ❖ Using Formatting Pane to work with menu, fonts, alignments, settings, and copy-paste
- ❖ Formatting data using labels and tooltips
- ❖ Edit axes and annotations
- ❖ K-means cluster analysis
- ❖ Trend and reference lines
- ❖ Visual analytics in Tableau
- ❖ Forecasting, confidence interval, reference lines, and bands

Hands-on Exercise:

- ❖ Apply labels and tooltips to graphs, annotations, edit axes' attributes
- ❖ Set the reference line
- ❖ Perform k-means cluster analysis on the given dataset



Tableau Syllabus

Working with Mapping

- ❖ Working on coordinate points
- ❖ Plotting longitude and latitude
- ❖ Editing unrecognized locations
- ❖ Customizing geocoding, polygon maps, WMS: web mapping services
- ❖ Working on the background image, including add image
- ❖ Plotting points on images and generating coordinates from them
- ❖ Map visualization, custom territories, map box, WMS map
- ❖ How to create map projects in Tableau
- ❖ Creating dual axes maps, and editing locations

Hands-on Exercise:

- ❖ Plot longitude and latitude on a geo map
- ❖ Edit locations on the geo map
- ❖ Custom geocoding
- ❖ Use images of the map and plot points
- ❖ Find coordinates
- ❖ Create a polygon map
- ❖ Use WMS

Working with Calculations and Expressions

- ❖ Calculation syntax and functions in Tableau
- ❖ Various types of calculations, including Table, String, Date, Aggregate, Logic, and Number
- ❖ LOD expressions, including concept and syntax
- ❖ Aggregation and replication with LOD expressions
- ❖ Nested LOD expressions
- ❖ Levels of details: fixed level, lower level, and higher level
- ❖ Quick table calculations



Tableau Syllabus

- ❖ The creation of calculated fields
- ❖ Predefined calculations
- ❖ How to validate

Working with Parameters

- ❖ Creating parameters
- ❖ Parameters in calculations
- ❖ Using parameters with filters
- ❖ Column selection parameters
- ❖ Chart selection parameters
- ❖ How to use parameters in the filter session
- ❖ How to use parameters in calculated fields
- ❖ How to use parameters in the reference line

Hands-on Exercise:

- ❖ Creating new parameters to apply on a filter
- ❖ Passing parameters to filters to select columns
- ❖ Passing parameters to filters to select charts

Charts and Graphs

- ❖ Dual axes graphs
- ❖ Histograms
- ❖ Single and dual axes
- ❖ Box plot
- ❖ Charts: motion, Pareto, funnel, pie, bar, line, bubble, bullet, scatter, and waterfall charts
- ❖ Maps: tree and heat maps
- ❖ Market basket analysis (MBA)
- ❖ Using Show me
- ❖ Text table and highlighted table



Tableau Syllabus

Hands-on Exercise:

- ❖ Plot a histogram, tree map, heat map, funnel chart, and more using the given dataset
- ❖ Perform market basket analysis (MBA) on the same dataset

Dashboards and Stories

- ❖ Building and formatting a dashboard using size, objects, views, filters, and legends
- ❖ Best practices for making creative as well as interactive dashboards using the actions
- ❖ Creating stories, including the intro of story points
- ❖ Creating as well as updating the story points
- ❖ Adding catchy visuals in stories
- ❖ Adding annotations with descriptions; dashboards and stories
- ❖ What is dashboard?
- ❖ Highlight actions, URL actions, and filter actions
- ❖ Selecting and clearing values
- ❖ Best practices to create dashboards
- ❖ Dashboard examples; using Tableau workspace and Tableau interface
- ❖ Learning about Tableau joins
- ❖ Types of joins
- ❖ Tableau field types
- ❖ Saving as well as publishing data source
- ❖ Live vs extract connection
- ❖ Various file types

Hands-on Exercise:

- ❖ Create a Tableau dashboard view, include legends, objects, and filters
- ❖ Make the dashboard interactive
- ❖ Use visual effects, annotations, and descriptions to create and edit a story



AI, ML & Tableau Syllabus



Thanks you

Now or Never



+91 72778 77778



info@zeblearn.com



www.zeblearn.com