Data science

Zetlan Technologies

e-Learning Course

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COURSE MODULES

Module 1: Introduction to Data Science

- What is Data Science?
- Applications of Data Science
- Data Science vs. Data Analytics vs. Machine Learning
- Tools & Technologies in Data Science
- Overview of Python & R for Data Science

Module 2: Python for Data Science

- Python Basics: Variables, Data Types, Operators
- Control Flow: Loops, Conditionals
- Functions & Modules
- File Handling
- NumPy: Arrays & Operations
- Pandas: DataFrames, Data Manipulation
- Matplotlib & Seaborn: Data Visualization

Module 3: Data Wrangling & Preprocessing

- Data Cleaning: Handling Missing Data, Duplicates
- Feature Engineering: Scaling, Encoding, Transformation
- Handling Outliers
- Data Normalization & Standardization
- Exploratory Data Analysis (EDA)

Module 4: SQL for Data Science

- Basics of SQL: SELECT, INSERT, UPDATE, DELETE
- Filtering & Sorting Data
- Aggregation Functions & GROUP BY
- Joins & Subqueries
- Window Functions
- Indexing & Performance Optimization

Module 5: Statistics & Probability for Data Science

- Descriptive Statistics: Mean, Median, Mode, Standard Deviation
- Probability Theory: Bayes' Theorem, Probability Distributions
- Inferential Statistics: Hypothesis Testing, p-values
- Correlation & Regression Analysis

Module 6: Machine Learning Fundamentals

- Supervised vs. Unsupervised Learning
- Linear Regression & Logistic Regression
- Decision Trees & Random Forest
- Support Vector Machines (SVM)
- Clustering (K-Means, Hierarchical)
- Model Evaluation: Accuracy, Precision, Recall, F1 Score

Module 7: Deep Learning & Neural Networks

- Introduction to Neural Networks
- TensorFlow & Keras Basics
- Building a Neural Network Model
- Convolutional Neural Networks (CNNs)
- Recurrent Neural Networks (RNNs)
- Transfer Learning

Module 8: Natural Language Processing (NLP)

- Text Preprocessing: Tokenization, Stopword Removal, Lemmatization
- Sentiment Analysis
- Named Entity Recognition (NER)
- Word Embeddings (Word2Vec, GloVe)
- Transformer Models (BERT, GPT)

Module 9: Big Data & Cloud Computing

- Introduction to Big Data & Hadoop
- Apache Spark for Data Science
- Cloud Platforms: AWS, GCP, Azure
- Deploying Models on Cloud

Module 10: Data Science Projects & Deployment

- End-to-End Data Science Project Workflow
- Model Deployment with Flask & FastAPI