Website : www.cipherschools.com | **Email** : support@cipherschools.com | **Contact** : +91-7988990591

Curriculum for the course of Integrated

Python, Data Science & Machine Learning

Course Structure

1. **Introduction to Data Science**
   - Overview of data science and its importance
   - Introduction to the data science workflow
   - Key skills and tools in data science

2. **Setting Up Your Environment**
   - **Anaconda Setup and Overview**: Introduction to Anaconda, installation, and management of Python environments.
   - **Google Colab Notebook Overview**: Getting started with Google Colab for Python programming and data science projects.
   - **Version Control with GIT/GITLAB**: Basics of version control, using Git for project management, introduction to GitLab for collaboration.

3. **Advanced Excel for Data Analysis**
   - Advanced formulas and functions
   - Data cleaning and preparation techniques
   - PivotTables, PivotCharts, and Power Query
   - Introduction to Excel macros and VBA for automation

4. **Python for Data Science**
   - Python fundamentals (variables, data types, conditionals, loops)
   - Functions, lambda expressions, and error handling
   - Working with data using Pandas
   - Data manipulation and analysis with NumPy

5. **Data Visualization**
   - Principles of data visualisation
   - Introduction to Matplotlib and Seaborn
   - Creating interactive visualisations with Plotly

6. **Introduction to Power BI**
   - Getting started with Power BI Desktop
   - Data modelling and DAX basics

- Creating dashboards and reports
- Power BI Service basics for sharing and collaboration

7. **Data Preprocessing Concepts**
   - Data cleaning and normalisation
   - Handling missing data
   - Feature engineering and selection

8. **Statistics Deep Dive**
   - Advanced statistical measures and distributions
   - Correlation and regression analysis
   - Hypothesis testing and inferential statistics

9. **Machine Learning Algorithms**
   - Supervised learning (linear regression, logistic regression, decision trees, random forests, SVMs)
   - Unsupervised learning (k-means clustering, hierarchical clustering, PCA)
   - Introduction to neural networks and deep learning

10. **Project: Building a Chatbot**
    - Introduction to NLP and chatbot frameworks
    - Designing and training a simple chatbot
    - Integrating the chatbot with Python or web applications

11. **Project: Image Classification Project**
    - Basics of image processing and computer vision
    - Introduction to CNNs (Convolutional Neural Networks)
    - Building and training a simple image classifier
    - Evaluating model performance

12. **LIVE Project**