Data Science Course Syllabus

Module 1: Introduction to Data Science

- Overview of Data Science and Applications

- Data Science vs. Data Engineering vs. Data Analytics

- Data Science Lifecycle

Module 2: Python for Data Science

- Python Basics (Variables, Loops, Functions)

- NumPy and Pandas for Data Manipulation

- Data Cleaning and Preprocessing

Module 3: Mathematics & Statistics

- Linear Algebra and Probability

- Descriptive and Inferential Statistics

- Hypothesis Testing and Probability Distributions

Module 4: Exploratory Data Analysis (EDA)

- Handling Missing Data and Outliers

- Data Visualization with Matplotlib & Seaborn

- Feature Engineering and Selection

Module 5: Machine Learning

- Supervised vs. Unsupervised Learning

- Regression and Classification Models

- Model Evaluation Metrics

Module 6: Deep Learning & Neural Networks

- Introduction to Neural Networks

- TensorFlow & PyTorch Basics

- CNNs, RNNs, and LSTMs

Module 7: Big Data & Cloud for Data Science

- Hadoop, Spark, and PySpark

- Cloud Computing (AWS, GCP, Azure)

- Deploying ML Models on the Cloud

Module 8: AI & Natural Language Processing (NLP)

- Text Processing and Tokenization

- Sentiment Analysis and Chatbots

Data Science Course Syllabus

- Transformer Models (BERT, GPT)

Module 9: Real-World Projects & Case Studies

- End-to-End Data Science Project

- Model Deployment & MLOps

- Ethical Considerations in AI