### **Month 1: Foundations of Data Science**

**Week 1: Introduction to Data Science**

* What is data science?
* The role of data science in today's world
* Key skills and tools for data scientists

**Week 2: Python Programming Fundamentals**

* Python basics (variables, data types, operators)
* Control flow (if-else statements, loops)
* Functions and modules
* Data structures (lists, tuples, dictionaries, sets)

**Week 3: Data Manipulation with Pandas**

* Introduction to Pandas
* Series and DataFrames
* Data cleaning and preprocessing (handling missing values, outliers, etc.)
* Data manipulation (filtering, sorting, grouping)

**Week 4: Data Visualization with Matplotlib and Seaborn**

* Introduction to data visualization
* Creating various types of plots (line, bar, scatter, histograms, etc.)
* Customizing plots (colors, labels, titles)
* Seaborn for statistical visualizations

### **Month 2: Machine Learning and Deep Learning**

**Week 5: Introduction to Machine Learning**

* Supervised vs. unsupervised learning
* Common machine learning algorithms (linear regression, logistic regression, decision trees, random forests, etc.)
* Model evaluation metrics (accuracy, precision, recall, F1-score)

**Week 6: Building Machine Learning Models**

* Model training and evaluation
* Feature engineering
* Hyperparameter tuning
* Cross-validation

**Week 7: Introduction to Deep Learning**

* Neural networks
* Backpropagation
* Deep learning frameworks (TensorFlow, PyTorch)

**Week 8: Building Deep Learning Models**

* Convolutional Neural Networks (CNNs) for image processing
* Recurrent Neural Networks (RNNs) for sequential data
* Natural Language Processing (NLP) applications