Course Outline

Data Science Training Program Outline
Duration: 3 Months

Month 1: Building Foundations

Week 1: Introduction to Data Science

- What is Data Science?
- Data Science workflow
- Role of a Data Scientist

Week 2-3: Python Programming

- Introduction to Python
- Data structures and data types
- Control structures (if, loops)
- Functions and modules

Week 4-5: Data Manipulation with Python

- Numpy for numerical operations
- Pandas for data manipulation
- Data cleaning and preprocessing

Week 6-7: Data Visualization

- Matplotlib for basic plotting
- Seaborn for advanced data visualization
- Data visualization best practices

Week 8-9: Introduction to Statistics

- Descriptive statistics
- Probability and distributions
- Hypothesis testing

Month 2: Advanced Data Science

Week 1-2: Machine Learning Fundamentals

- Introduction to Machine Learning
- Supervised learning and unsupervised learning
- Model evaluation and selection

Week 3-4: Machine Learning with Scikit-Learn

- Data splitting, cross-validation
- Regression and classification
- Feature selection and engineering

Week 5-6: Advanced Data Science Techniques

- Time series analysis
- Natural Language Processing (NLP)
- Feature engineering and model optimization

Month 3: Specialized Topics and Applications

Week 7-8: Big Data and Distributed Computing

- Introduction to Hadoop and Spark
- Processing large datasets
- Distributed computing frameworks

Week 9-10: Capstone Project and Real-World Applications

- Students work on a data science project
- Presentation and documentation of the project
- Real-world data science applications and case studies