



TETHRAL INTRODUCTION TO DATA ANALYTICS WITH PYTHON CURRICULUM COURSE OUTLINE

Week 1-2

Introduction to Python Basics

- **Module 1:** Introduction to Python
- **Module 2:** Data types and variables
- **Module 3:** Conditional statements and loops
- **Module 4:** Functions and classes
- **Exercises:** Basic Python Programming Exercises

Week 3-4

Introduction to Data Handling with Pandas

- **Module 1:** Introduction to Pandas Library
- **Module 2:** Data Structures in Pandas: Series and DataFrame •
- Module 3:** Data Cleaning and Preprocessing with Pandas
- **Module 4:** Data Transformation and Merging with Pandas

- **Exercises:** Hands-on Data Handling with Pandas

Week 5-6:

Data Visualization with Matplotlib and Seaborn

- **Module 1:** Data visualization with Matplotlib and Seaborn
- **Module 2:** Exploratory data analysis (EDA)
- **Exercises:** Building an EDA

Week 7-8

Introduction to Statistical Analysis with Python

- **Module 1:** Descriptive Statistics and Data Distributions •
- Module 2:** Hypothesis Testing and Confidence Intervals •
- Module 3:** Correlation and Regression Analysis
- **Module 4:** Introduction to Time Series Analysis
- **Exercises:** Statistical Analysis Exercises

Week 9-10

Data Ethics

- **Module 1:** Data ethics and responsible AI
- **Module 2:** Data privacy and security
- **Module 3:** Data storytelling

- **Module 4:** Data communication and visualization
- **Exercise:** Write a blog post or create a data storytelling presentation.

Week 11-12

Real-World Applications and Final Project

- **Module 1:** Case Studies in Data Analytics
- **Module 2:** Ethical Considerations in Data Analytics
- **Module 3:** Data Analytics in Business and Research
- **Module 4:** Final Project: Applying Data Analytics Techniques to a Real Dataset
- **Exercises:** Final Project

Final Exam: Comprehensive exam covering all course topics