Introduction to Data Analytics
Suitable for: G10 - G12

Prerequisite: Introduction to Python: Level I
Duration: 15 Weeks
Classes per Week: 1 class (45 minutes each)

Course Overview:

This course introduces students to the fundamentals of data analytics using Python and the NumPy library. Students will learn how to analyze, manipulate, and interpret data, utilizing essential skills in data processing and statistical analysis. By the end of the course, students will be able to perform basic data analysis tasks and apply their knowledge in projects.

Covered Topics

Unit 1: Introduction to Data Analysis and NumPy Basics
- Introduction to data analysis and its applications
- Analyzing data in Python using the NumPy library
- Understanding and using NumPy arrays, indexing, and slicing

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Unit 2: Working with Data Types and Array Operations
- Exploring different data types in NumPy
- Utilizing array functions for efficient data processing
- Applying random functions and basic statistics

Unit 3: Data Filtering and Basic Analysis
- Filtering data based on specific conditions
- Conducting statistical analysis with NumPy
- Developing insights from numerical datasets

Unit 4: Data Analysis Projects
- Project I: Sales Analysis — analyzing and interpreting sales data
- Learning the steps of data analysis, from data cleaning to visualization
- Working with CSV files: reading, writing, and manipulating data

Unit 5: Advanced Projects and Real-World Applications
- Project II: Student Performance Analysis — analyzing educational data
- Project III: Alzheimer's Disease Analysis — exploring healthcare data for insights
- Course completion and demonstration of data analytics skills through final projects

Materials Needed:
- Computer or tablet
- Internet connection for programming and resources
- Chrome Browser

Assessment
At the end of each lesson, learners will be assessed on their ability to apply data analysis techniques using NumPy. Assessments will focus on their understanding of data manipulation, statistical functions, and their ability to interpret results.

Certification
A certificate of completion will be awarded to students who successfully complete the course, recognizing their proficiency in introductory data analytics.