



# Data Automation Mentoring Program

**ANI\_503b | Blended | Custom | Expert**

**Course Duration:** 9 weeks

The Data Automation Mentoring is designed for non-programmers who want to create programs in Python to help them automate some of their mundane daily tasks related to gathering and analyzing data. By using hands-on, lab-based programming exercises and a mix of live sessions and programming assignments, it provides an opportunity to the student to define and develop a Python program based on a practical and relevant use case. [Live Session: 1/2 day every week], [One-on-One Mentoring: 1 hour each week], [Self-Study: Python program development, approximately 6 hours average each week]

## Intended Audience

This workshop is intended for anyone (non-programmers) who wants to build knowledge and skills related to leveraging data tools to be more productive.

## Objectives

After completing this course, the student will be able to:

- Analyze a problem and design step-by-step ways to automate the task at hand
- Learn how to manage data in different forms of data structures to load and manipulate data
- How to use key control structures to manage the process flow
- Implement solutions based on string manipulation, regular expression processing and loops
- Implement a data processing exercise using control and data structures including file operations
- Implement text file and Excel file handling for Input/Output processing
- Learn how to automate data collection through APIs
- Python is used as the programming language for all exercises and lab-work

## Outline

### 1. Fundamentals of PYTHON 1

1.1 Create and run a program

1.2 int, str, float, print()

1.3 Import - os, sys

Exercise: Program Development Assignment

### 2. Fundamentals of PYTHON 2

2.1 File operations

2.2 for, if/elif/else, lists, sys.argv

2.3 try, except

Exercise: Program Development Assignment

### 3. OPENPYXL

3.1 pip install, while

3.2 xlsx - open, create, read, write, save

3.3 chart, sys.argv, tkinter

Exercise: Program Development Assignment

### 4. PANDAS

4.1 pandas dataframe

4.2 load dataframe, output to xlsx

4.3 add, drop, columns, rows, analysis

Exercise: Program Development Assignment

### 5. Participant USE CASE - PART 1

5.1 Designing simple, maintainable scripts

5.2 Writing pseudo-code, functions, logical steps

5.3 Package installation, functions

Exercise: Program Development Assignment

### 6. Participant USE CASE - PART 2

6.1 Types of inputs

6.2 File-based, URL-based, API-based, SQL-based

6.3 Example of invoking an API

Exercise: Program Development Assignment

### 7. Participant USE CASE - PART 3

7.1 Analysis using python and/or pandas

7.2 Package specific implementations

7.3 Pros and Cons of approaches

Exercise: Program Development Assignment

### 8. Participant USE CASE - PART 4

8.1 Output the analysis from the USE CASE

8.2 Output format

8.3 Output visualizations

Exercise: Program Development Assignment

### 9. Participant USE CASE - Final Completion

9.1 Participant USE CASE submission

9.2 Participant USE CASE presentation

9.3 Participant USE CASE demonstration

9.4 Feedback and Wrap-up