Refresh and Advanced Concepts (20 Hours)

Python Refresher and Advanced Syntax (4 hours)

- Quick Refresher on Python Basics: Syntax, Variables, Data Types
- Advanced Data Types: List Comprehensions, Generators, Decorators

Advanced Control Structures and Error Handling (3 hours)

- Deep Dive into Conditional Statements and Loops
- Advanced Exception Handling Techniques

Object-Oriented Programming and Advanced Functions (4 hours)

- Review of OOP: Classes, Inheritance, Polymorphism
- Advanced Functions: Lambda, Map, Filter, Reduce, Decorators

Efficient Data Handling and Algorithms (4 hours)

- Advanced Data Structures: Sets, Dictionaries, Collections
- Introduction to Algorithms: Sorting, Searching, Basic Algorithmic Problems

Modules, Packages, and File Operations (3 hours)

- Modules and Packages: Importing, Creating, and Using
- Advanced File Operations: File System Navigation, Reading/Writing Files

Python Libraries Overview (2 hours)

- Introduction to Essential Python Libraries: NumPy, Pandas, Matplotlib

Domain-Specific Modules (20 Hours)

Networking with Python (4 hours)

- Sockets, Requests, and Networking Protocols
- Assignment: Network Automation Script for Device Configuration

AI/ML & Data Engineering (DE) with Python (4 hours)

- Overview of AI/ML Concepts
- Introduction to Data Engineering Practices
- Assignment: Data Cleaning and Analysis Using Pandas and NumPy

Storage Technology with Python (4 hours)

- Managing Storage with Python: File Systems, Databases
- Assignment: Building a Simple Storage Management System

Quality Assurance (QA) Testing with Python (4 hours)

- Introduction to Automated Testing with Python
- Assignment: Developing Test Scripts for a Web Application

Web Automation Testing with Python (4 hours)

- Web Scraping and Automation with Selenium
- Assignment: Automating Form Submission and Data Extraction on a Website

Capstone Projects and Assignments related to Networking and Pen testing (10 Hours)

Integrated Capstone Project (6 hours)

- A comprehensive project that integrates concepts from Networking, AI/ML & DE, Storage, and QA/Web Testing. This could be a multi-faceted application or a series of interconnected scripts that demonstrate the practical application of Python in these domains.

Python in Networking and Penetration Testing (4 hours)

- Fundamentals of Network Security and Penetration Testing
- Using Python for Network Scanning and Reconnaissance
- Developing and Implementing Penetration Testing Tools with Python (e.g., port scanners, vulnerability scanners)
- Automating Penetration Testing Processes
- Ethical Considerations and Legal Compliance
- Assignments:
- Create a Custom Port Scanner
- Develop a Simple Vulnerability Assessment Tool