support@nanocodes.com.ng
31 Enugu Road Opp. St. Theresa's Cathedral Catholic Church, Nsukka, Enugu State
techverve.nanocodes.com.ng

COURSE OUTLINE FOR PYTHON

Week 1: Python Basics

- **Introduction to Python**: setting up the environment, running scripts
- **Basic Syntax**: indentation, comments, and variables
- **Data Types**: Strings, Numbers, Booleans
- **Basic Operations**: arithmetic, comparison, logical operations

Week 2: Data Types and Operations

- **Strings**: formatting, indexing, slicing, methods
- **Numbers**: integers, floats, complex numbers, mathematical operations
- **Booleans**: logical operations, conditional statements

Week 3: Data Structures

- **Lists**: indexing, slicing, methods, list comprehensions
- **Tuples**: immutability, indexing, slicing
- **Dictionaries**: key-value pairs, methods, dictionary comprehensions

Week 4: Control Structures

- **If-else Statements**: conditional logic, nesting
- **For Loops**: iterating over sequences, loop control
- **While Loops**: conditional looping, loop control

Week 5: Functions

- **Defining and Calling Functions**: arguments, return values
- **Scope**: local vs global variables
- **Lambda Functions**: syntax and use cases
- **Built-in Functions**: map, filter, reduce

Week 6: Object Oriented Programming (OOP)

- **Classes and Objects**: defining classes, creating objects
- **Methods**: defining and using instance methods
- **Inheritance**: parent and child classes
- **Polymorphism and Encapsulation**

Week 7: File Handling

- **Reading and Writing Files**: open, read, write, append, close
- **Working with Different File Types**: text files, CSV, JSON
- **File Methods and Attributes**

Week 8: Data Analysis with Pandas

- **Introduction to Pandas**: Series and DataFrames

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- **Data Operations**: loading, inspecting, and cleaning data
- **Data Manipulation**: filtering, grouping, merging
- **Data Visualization**: plotting with Pandas

Week 9: Modules, Packages, and Git

- **Importing Modules**: standard library, third-party modules
- **Creating Modules and Packages**: structure, **init**.py
- **Virtual Environments**: creating and managing
- **Introduction to Git**: version control basics, repositories, commits
- **Using Git**: branching, merging, resolving conflicts
- **Collaborating with Git**: remote repositories, pull requests

Week 10: Web Scraping and Introduction to Web Development

- **Introduction to Web Scraping**: ethics and legality
- **Tools**: BeautifulSoup, requests, Scrapy
- **Extracting Data**: parsing HTML, handling dynamic content
- **Introduction to Web Development**: basics of HTML and CSS

Week 11: Automation

- **Automating Tasks**: scripting, scheduling tasks with sched, cron, task scheduler
- **Sending Emails and Text Messages**: smtplib, email, twilio
- **Controlling Keyboard and Mouse**: pyautogui

Week 12: Building GUI Applications

- **GUI with Tkinter**: creating windows, widgets, events
- **Project Development and Best Practices**: coding style, testing, debugging, documentation
- **Using Git for Project Version Control and Collaboration**