Curriculum Outline: Python Coding for Kids and Teenagers

Module 1: Introduction to Python

- Lesson 1: Introduction to Programming
    - What is programming?
    - Introduction to Python and its features
    - Setting up the programming environment (installation, IDE)
- Lesson 2: Python Basics
    - Printing output with `print()`
    - Variables and data types (strings, numbers, booleans)
    - Basic arithmetic operations
- Lesson 3: User Input and Variables
    - Taking user input with `input()`
    - Working with variables and reassignment
    - String manipulation and concatenation

Module 2: Control Flow and Conditional Statements

- Lesson 4: Conditional Statements (if, elif, else)
    - Making decisions with if statements
    - Comparisons and logical operators
    - Conditional branching examples
- Lesson 5: Loops (for and while)
    - Introduction to loops
    - Using `for` loops to iterate over lists, strings, and ranges
    - Utilizing `while` loops for conditional repetition
- Lesson 6: Control Flow Challenges
    - Solving coding challenges using conditionals and loops
    - Implementing algorithms for simple problems

Module 3: Data Structures and Functions

- Lesson 7: Lists
    - Creating and modifying lists
    - Accessing elements and list slicing
    - Common list methods and operations
- Lesson 8: Dictionaries
    - Introduction to dictionaries and key-value pairs
    - Accessing, adding, and modifying dictionary elements
    - Dictionary methods and practical examples
- Lesson 9: Tuple and Se
    - Common Tuple and Set methods and operations

- Lesson 10: Functions
    - Defining and calling functions
    - Function parameters and return values
    - Writing reusable and modular code

Module 4: File Handling and Modules

- Lesson 11: File Handling
    - Reading from and writing to text files
    - File modes and handling file errors
    - Processing file data and extracting information
- Lesson 12: Modules and Libraries
    - Importing and using built-in modules
    - Exploring popular libraries (e.g., random, math)
    - Building and utilizing custom modules

Module 5: Advanced Concepts

- Lesson 13: Exception Handling
    - Understanding errors and exceptions
    - Handling exceptions with try-except blocks
    - Graceful error handling and user feedback
- Lesson 14: Object-Oriented Programming (OOP) Basics
    - Introduction to classes and objects
    - Defining attributes and methods
    - Encapsulation and code organization
- Lesson 15: OOP Inheritance and Polymorphism
    - Extending classes through inheritance
    - Overriding methods and accessing parent class
    - Polymorphism and method overriding examples

Module 6: Final Project

- Lesson 16: Final Project Planning
    - Brainstorming project ideas
    - Defining project requirements and scope
- Lesson 16: Final Project Development
    - Implementing the project using learned concepts
    - Testing, debugging, and refining the project
- Lesson 17: Final Project Presentation
    - Presenting the final project to peers and mentors
    - Showcasing the features and functionalities