Curriculum for Python Programming

Curriculum Overview :

This curriculum will take the learners through the concepts of python programming right from the basics to intermediate and then advanced. Later “Creative Projects” will be assigned that can be completed in small groups or individually. Working in small groups is sometimes required by state standards. These projects can be scaled up or down to meet available class times.

The course curriculum can be defined as following topics:

- Fundamentals of Python
  - Introduction to Python
  - Running Python Programs
  - Writing Python Code

- Working with Data
  - Data Types and Variables
  - Using Numeric Variables
  - Using String Variables

- Input and Output
  - Printing with Parameters
  - Getting Input from a User
  - String Formatting

- Making Decisions
  - Logical Expressions
  - The “if” Statement
  - Logical Operators
  - More Complex Expressions

- Finding and Fixing Problems
  - Types of Errors • Troubleshooting Tools
  - Using the Python Debugger

- Lists and Loops
  - Lists and Tuples
  - List Functions
  - “For” Loops • “While” Loops

- Numeric and Date Functions
  - Dates and Times
  - Advanced Data and Time Management
  - Random Numbers • The Math Library

- Working with Strings
  - Character Data
  - String Functions
  - Input Validation with “try / except”

- Functions
  - Writing and Calling Functions
  - Function Inputs and Outputs
  - Local and Global Scope

- Python Classes
  - Thinking about Objects
  - Class Variables and Methods
  - Managing Class Files

- Class Instances
  - Creating Objects with Instance Data
  - Instance Methods
  - Managing Objects

- Creative Project
  - Project Life-cycles and teams