STRANDS AND STANDARDS
PYTHON 1, INTRODUCTION

Learning that works for Utah
CTE®

Course Description

Python is a language with a simple syntax, and a powerful set of libraries. It is an interpreted language, with a rich programming environment, including a robust debugger and profiler. While it is easy for beginners to learn, it is widely used in many scientific areas for data exploration. This course is an introduction to the Python programming language for students without prior programming experience.

Intended Grade Level	7-8
Units of Credit	0.5
Core Code	35.02.00.00.004
Concurrent Enrollment Core Code	N/A
Prerequisite	Recommended: Creative Coding
Skill Certification Test Number	N/A
Test Weight	N/A
License Area of Concentration	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
Endorsement 1	Introduction to Computer Science
Endorsement 2	Program & Software Development
Endorsement 3	Web Development
Endorsement 4	Information Technology Systems
Endorsement 5	BAM - CTE/General or Basic or Lvl 2

STRAND 1
Python Basics

Standard 1
Basics

Students will understand the history of programming languages.

Students will understand the different levels of programming languages:

- Binary
- Assembly
- Compiled
- Interpreted

Students will use an editor/IDE (Integrated Development Environment) to compile and run programs Students will always use best practices to coding tasks

- Sequencing algorithms
- Indenting
- Eliminating redundancy
- Commenting
- Naming conventions

Standard 2
Variable & Data Types

Students will demonstrate the ability to use variables in a program.

Students will demonstrate the use of different data types.

- Integer
- Float
- String
- Boolean

Students will use appropriate naming conventions

- Snake case (first_name)

Students will give descriptive names to variables

Standard 3
Operators

Students will use arithmetic operators in a program (+, -, *, /)

Students will demonstrate the use of order of operations

- Parentheses Excuse My Dear Aunt Sally (PEMDAS)

Students understand the single equal sign performs an assignment

Students understand the += and the -= operators are used for incrementing and decrementing

Standard 4
Errors

Students will identify errors and debug a program

Students will identify the three types of errors:

- Syntax
- Logic
- Runtime

Standard 5

Input and Output Functions

Students will demonstrate the use of input and print functions

- input()
- print()

Students will demonstrate the use of formatting methods

- Concatenation
- Type Casting
  - Integer
  - Float
  - String

Standard 6

Documentation

Students will document code by adding #comments to each program

- Explain code
  - Function
  - List
- Make code more readable
- Attribution

Performance Skills

- Use a programing editor to write working code
- Demonstrate the use of variables with different data types
- Demonstrate the use of input & output formatting methods
- Demonstrate the use of #comments

STRAND 2

Conditionals

Standard 1

Operators

Students will understand the conditional logic of >, <, >=, <=, ==, != operators when comparing

Standard 2

If Statements

The student will control flow with an if statement in a program

Standard 3

Elif Statements

The student will control flow with an Elif statement in a program

Standard 4

Else Statements

The student will control flow with an Else statement in a program

Performance Skills

- Understand conditional logic
- Understand and use If, Elif, and Else statement

STRAND 3
Loops

Standard 1
Students will use loops (iteration) to efficiently repeat code
Students will know which type of loop to use in a program
- For loop
- Nested loops
  - Indentation conventions

Standard 2
Students will use a range in a loop
Students will design a loop with a range so they iterate the correct number of times

Standard 3
Students will use variables in the argument of a loop

Standard 4
Students will use incrementing and decrementing (+=. -=) in the body of a loop

Performance Skills
- Students will use a range in a loop
- Students will use variables in the argument of a loop
- Students will use nested loops

STRAND 4
Functions

Standard 1
Students will understand the difference between pre-defined and user-defined functions
Students will understand the purpose of using functions for eliminating redundancy and reusability

Standard 2
Students will create user-defined functions
- Students will use appropriate naming conventions
  - Snake case (first_name)
- Students will give descriptive names
- Students will understand that a user-defined function will perform a single task
- Students will use one or more parameters in a function definition

Standard 3
Students will call (use) functions
- Students will be able to call a function with arguments

Performance Skills
- Students will be able to create and call a function with a parameter