Course Description

COP1047C | Python Programming |4.00 credits

This is a course in Python programming available for students at all levels. Students will learn the syntax and rules of the Python language, including how to code, compile, and execute programs. Students study program design, structured modular programming arrays, report generation, and file processing.

Course Competencies:

Competency 1: The student will demonstrate an understanding of the program development process by:
1. Writing pseudo code for program development before writing the code
2. Applying the techniques of functional decomposition
3. Incorporating adequate and meaningful comments into the source code of programming projects
4. Participating in a team to develop a solution to a problem
5. Testing and debugging programming logic and code

Competency 2: The student will demonstrate an understanding of mastery of basic Python fundamental data types and operators by:
1. Understanding the use of variables in Python for programming assignments
2. Using descriptive and meaningful names in programming assignments
3. Creating programs that use casting of data types
4. Creating programs that use all existing operator(s) (+,-,*,%,/,=) available in Python
5. Explain a variable's properties, such as assist name, value, scope, persistence, and size

Competency 3: The student will demonstrate an understanding of conditional statements by:
1. Creating programs that use if, else, if, and else statements to evaluate conditions
2. Creating a program that uses logical operators (and, not, or) in conditional statements
3. Creating a program that uses comparison operators (==, <, >, <=, >=) in conditional statements
4. Creating a program that uses nested conditional statements

Competency 4: The student will demonstrate an understanding of loops by:
1. Creating programs that use while and for loops to create repetition
2. Analyzing existing programs with loops and determining the results
3. Creating programs that use nested loops

Competency 5: The student will demonstrate an understanding of mastery of functions by:
1. Creating functions based on problem specifications
2. Creating programs that include and use existing Python Library functions
3. Creating a program that uses functions to return values
4. Identifying the scope of variables in functions

Competency 6: The student will demonstrate an understanding of structured data types by:
1. Creating a program that uses: - Lists; - Tuples; - Sets; - Dictionaries
2. Importing a Python library to perform specific tasks with data, such as graphing and manipulating data frames

Competency 7: The student will demonstrate an understanding of the input and output functions of a program by:
1. Writing a program that collects input and converts it to the appropriate data type
2. Writing a program that reads an existing sequential file
3. Writing a program that creates a sequential file
4. Writing a program that produces formatted printed output

Updated: Fall 2025

5. Implementing exception handling

<u>Learning Outcomes:</u>
- Use quantitative analytical skills to evaluate and process numerical data
- Solve problems using critical and creative thinking and scientific reasoning
- Use computer and emerging technologies effectively