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MARICOPA
COMMUNITY COLLEGES

Python Programming: Level I

Course: **CIS156**	Lec + Lab **3.0** Credit(s) **4.0** Period(s) **4.0** Load
	Course Type: **Occupational**
First Term: **2021 Fall**	Load Formula: **T - Lab Load**
Final Term: **Current**	

Description: Introduction to Python programming. Includes general concepts, program design, development, data types, operators, expressions, flow control, functions, classes, input and output operations, debugging, structured programming, and object-oriented programming.

Requisites: Prerequisites: A grade of C or better in CIS105 or permission of Instructor.

MCCCD Official Course Competencies

1. Explain the development of Python applications. (I)
2. Explain the control structures in Python. (II)
3. Utilize basic data structures in Python. (III, IV)
4. Utilize string and character manipulation in Python. (V)
5. Utilize object-oriented programming concepts in Python. (VI)
6. Utilize Python to load, save and manipulate persistent data. (VII)
7. Identify and debug common mistakes in programs written in Python. (VIII, IX)

MCCCD Official Course Outline

I. Python language
  A. History of Python
  B. Operators
  C. Variables
  D. Terminology
  E. Selection structure
II. Control structures/statements
  A. Counter-controlled repetition
  B. For repetition
  C. While repetition
  D. Break and Continue statements
III. Functions
  A. Program functions in Python
  B. Class methods
  C. Using Python modules
  D. Recursion vs. Iteration
IV. Data structures operations
  A. Lists
  B. Tuples
  C. Dictionaries
  D. Sets

    D. Sets

    E. Range

V. String and characters

    A. Fundamentals of characters and strings

    B. String constructors

    C. Concatenating strings

    D. String methods

VI. Object-oriented programming

    A. Definition

    B. Class scope and access

    C. Constructors /Methods

    D. Abstraction

    E. Software reusability

    F. Encapsulation

    G. Inheritance

    H. Composition

VII. Data persistence

    A. Read and write text data to text files

    B. Support of database connectivity

    C. Issue embedded SQL commands (SELECT/UPDATE/INSERT/DELETE) via Python

VIII. Debugging

    A. Syntax errors

    B. Logic errors

    C. Run-time errors

    D. Debugging techniques

    E. Test data

IX. Exception handling

    A. The basics of Python error-handling

    B. Error-handling techniques

    C. Try blocks

    D. Throwing, catching, and re-throwing an exception

MCCCD Governing Board Approval Date: **February 23, 2021**

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