CIS C157: INTRODUCTION TO PYTHON PROGRAMMING

Item	Value
Curriculum Committee Approval Date	10/27/2023
Top Code	070710 - Computer Programming
Units	3 Total Units
Hours	68 Total Hours (Lecture Hours 54; Lab Hours 14)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)

Course Description

Students will learn structured programming techniques using Python, an interpreted, high-level, and general-purpose programming language. The course is designed for students with no prior programming experience. Topics are introduced through hands-on practical exercises with an emphasis on variables, expressions, statements, programming with strings, and a general introduction to the principles of object-oriented programming. This course helps students prepare for careers such as Software Application Developer through the practical application of conditional statements, loops, and functions using the syntax of the Python programming language. ADVISORY: CIS C111. Transfer Credit: CSU.

Course Objectives

- 1. Demonstrate the design of a Python program, using pseudocode prior to implementation, and considering users requirements.
- 2. Demonstrate navigation of a mainstream, professional Integrated Development Environment to debug and compile Python programs.
- 3. Demonstrate working knowledge of Python concepts and terminology sufficient to discuss issues, bugs, errors, and other challenges with students and programmers.
- 4. Demonstrate the ability to solve problems as they occur in Python programming, including researching error codes, bugs from the compiler.

Lecture Content

Variables, expressions, statements Functions Conditionals Iteration and for-loops Programming with Strings Lists Modules and Files Recursion Dictionaries Classes and Objects Classes and Functions/Methods Sets of Objects Inheritance

Lab Content

Write working code using basic Python syntax Write code for basic file handling Create a program that finds the highest and lowest values in a list Implement a function to check if a given string is a palindrome Write a Python script to scrape information from a website Write a Python script

that automates a repetitive task, such as renaming files in a directory, sending automated emails, or downloading files from a website

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)
- Lab (04)
- DE Live Online Lab (04S)
- DE Online Lab (04X)

Instructional Techniques

A variety of instructional techniques will be employed to encompass different student learning styles. These may include, but are not limited to, lecture, discussion, projects, and small group activities. Instruction will be supplemented, where appropriate, by digital media presentations and resources, guest speakers, and suggested field trips.

Reading Assignments

Students will read from the required textbook and any additional reading resources provided.

Writing Assignments

For each modules programming demonstration, students will be tasked to write a minimum number of sentences describing the errors encountered. Student will be asked to include a screenshot in their documentation. Students will discuss the circumstances leading to any errors encountered. Speculate as to the nature of the bug (or error), and ask what can be done to remedy it.

Out-of-class Assignments

Watch video demonstrations, trying each line of code typed by the presenter. Be sure that the Integrated Development Environment (IDE) is working. While working through the demonstration code independently, students will be expected to take note of any errors experienced and post them to the discussion, where other students and the instructor will provide additional description to understand it further. At the close of the module, the source code created will be copied/pasted into a word processing document. A screenshot of the output the program made, including any errors will be provided by the student.

Demonstration of Critical Thinking

Students will be asked to read and review academic concepts in the textbook while experiencing how working code behaves under different conditions. Thus, practical programming techniques are taught through personal understanding, hands-on discovery, active learning, and discussing concepts and their results with others.

Required Writing, Problem Solving, Skills Demonstration

In the course of trying programming techniques, when bugs and challenges are experienced, the student solves problems by writing clearly, explaining how academic concepts are applied successfully or unsuccessfully, and works iteratively to solve problematic code.

Eligible Disciplines

Computer information systems (computer network installation, microcomputer ...: Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience. Computer science: Masters degree in computer science or computer engineering OR bachelors degree in either of the above AND

masters degree in mathematics, cybernetics, business administration, accounting or engineering OR bachelors degree in engineering AND masters degree in cybernetics, engineering mathematics, or business administration OR bachelors degree in mathematics AND masters degree in cybernetics, engineering mathematics, or business administration OR bachelors degree in any of the above AND a masters degree in information science, computer information systems, or information systems OR the equivalent. Note: Courses in the use of computer programs for application to a particular discipline may be classified, for the minimum qualification purposes, under the discipline of the application. Masters degree required.

Textbooks Resources

1. Required Miller, B.; Ranum, D.; Elkner, J.; Wentworth, P.; Downey, A.B.; Meyers, C.; Mitchell, D. How To Think Like a Computer Scientist: Interactive Edition, 3rd ed. Runestone, 2016 Rationale: Legacy Text - Open Educational Resource

Other Resources

1. IT white papers and articles are available at no charge to all students at multiple sites as recommended by the instructor. 2. Coastline Library