University of California Santa Cruz Extension

CMPR.X415- Python Programming for Beginners

Instructor: Irv Kalb

Course Description:

This hands-on lab-based course is intended for newcomers to programming. Python is favored by first-time programmers because it presents engineering concepts in a straight-forward, clear language, while, quietly and behind-the-scenes, it takes care of the difficult, tedious and error-prone details that present the major obstacles to writing a program in older languages. Python is an open-sourced language with rich features and is used extensively in the industries.

The course covers the important concepts and programming mechanisms that exist in all programming languages: Reading and writing to standard IO, using operators, controlling the flow of execution, using functions, reading and writing files, and object-oriented programming concepts. It also includes Python specific facilities such as code re-use, built-in sequence types, and iteration. Interactions and expert help are available. Students who successfully complete this course will be ready to take the in-depth "Python For Programmers" course.

Note(s): If you are already familiar with any programming language, the pace of this course may be slow. More experienced programmers should take "Python for Programmers".

Course Objectives:

At the conclusion of the course, participants should be able to:

- Describe the use and advantages of Python in the software industry
- Develop programs using basic Python IDE (Integrated Development Environment)
- Control printing and reading keyboard input
- Manage and employ strings and lists (sequences): iterating, indexing
- Process errors/exceptions
- Effectively apply techniques for flow-of-control (branching, looping and function) mechanisms
- Describe, import and apply Python modules/libraries
- Read and write files
- Create functions with parameters, and calling functions with arguments
- Articulate namespaces and scope
- Create and use a simple class

Performance Evaluation:

Homework 100%

Six homework assignments will be given, worth 20 points each.

Grading:

Grade options	%

A	>93
A-	90-92
B+	88-89
B	83-87
B-	80-82
C+	78-79
C	73-77
C-	70-72
D+	68-69
D	63-67
D-	60-62
F	59 and below
Credit	60 and above
No Credit	59 and below

Required Texts:
None

Recommended Texts:
Learn to Program with Python 3 – Irv Kalb, available on Amazon and through the publisher, APress.

Python documentation, **https://www.python.org/doc**

Python for Informatics, Charles Severance, available free on line via YouTube

Course Outline:

Class	Topic
1	· Introduction to Python as a programming language · Examples of programs written in Python · Install and use the IDLE programming environment, shell and files · Types of data · Variables · Assignment statements · Math operators used in assignment statements · Simple print statement · Writing and saving a program in a file · Bugs: how to read and understand a 'Traceback'
2	· Python comments · White space · Getting data into a program using raw_input() · Getting results out from a program using print · Using some of Python's built in functions (e. g., float, int, str) · Different ways of using the print statement · Overview of how code works (recipe example) · Building your own function · Calling functions and passing arguments · Receiving parameters in functions · Returning value or values · Sample functions
3	· Scope - local vs global variables · If statements · Flowcharting · Boolean expressions · Else clause · Nesting if statements · Examples of functions with if statements · Elif clause · Other comparison operators to use in if statements · Conditional logic: Boolean and, or, and not operators · Truth tables

4	· Build 'Guess the number game' · Loops · Python's while loop · Importing Python modules · Generating and using random numbers · Simulation of flipping a coin · Break statement · Algorithms and pseudo-code
5	· Lists: creation, manipulation · Indexing elements in a list · Build Madlibs using user input · Build Madlibs using lists · List operations · Iterating through a list · Built in range function · for loops, and using range() to iterate through lists · Other built in list operations
6	· Strings: creation, manipulation · String operations · Indexing characters in a string, slicing · Python's split and join functions. · for loops, and using range() to iterate through strings · Creating, reading, and writing files · Module re-use

UCSC Extension Policies:

Academic Integrity Policy:

UCSC Extension, as a unit of the University of California Santa Cruz, takes academic integrity very seriously. All forms of academic misconduct, including but not limited to, cheating, fabrication, plagiarism, or facilitating academic dishonesty are grounds for student discipline. Unless otherwise indicated by the course instructor, assignments must be individual efforts. It is not acceptable to copy (verbatim or even with minor changes) whole sections of a book, article or Internet resource, and submit them as one's own work. References should be listed and direct quotes indicated as such, with the author cited.

Grading Options:

When students enroll, letter grading **(A, B, C, D or F),** is the default. The Pass/No Pass (P/NP) or Not for Credit (NC) options are available only to students in good academic standing. Students may elect to take courses for a letter grade, Pass/No Pass (P/NP) or Not for Credit (NC). However, requests for P/NP or NC grades must be submitted seven days before the last scheduled day of the course. A passing letter-grade is required in order for a course to be applicable to a certificate.

Please visit the Student Services webpage for links to the complete description of grading options http://www.ucsc-extension.edu/student-services/grading.

Dropping a Course:

If a student does not intend to, or for any reason cannot, complete a course s/he is enrolled in, it is the student's obligation to formally notify the instructor and UCSC Extension prior to the last day of class. All drop requests must be submitted using the online form at http://www.ucsc-extension.edu/content/drop-request. To be eligible for a refund, **drop requests must be submitted at least three business days** before the course begins. **If we do not receive the request in that time period, no refund will be granted.**

Failure to follow this policy and associated guidelines may result in the entry of a default grade of "F" on the student's permanent record.

Incompletes:

Under certain circumstances, an "incomplete" ("I") may be authorized for students who are unable to complete a course within the prescribed time. Students must have completed a minimum of 70 percent of the course work and it must be of passing quality in order to qualify for an incomplete grade.

To be considered for an incomplete, the student must send a formal request by email to extensionprogram@ucsc.edu before the last class meeting. If approved, the instructor and program director will agree upon the terms of the incomplete, including the specific work required and the deadline for clearing the incomplete. Once the necessary work has been submitted, the "I" will be changed to the appropriate grade. Incomplete grades must be cleared by the agreed upon deadline or the "I" will convert to "F." Courses paid under a contract may be subject to additional restrictions.

Students with an incomplete will not receive additional instruction or access to the online course website. Students must make independent arrangements with the instructor to make up missed assignments or class time outside of the normal course schedule. Students are not permitted to audit future courses to make up the missed work. All recommended plans must accommodate for these restrictions and are subject to approval by the academic department and Academic Review Committee (ARC).

Grade Changes:

Per policy, changes to a course grade can be made by the instructor only on the basis of clerical or procedural error and never on the basis of reexamination or completion of additional work. For more information, contact extensionprogram@ucsc.edu. Grade appeals must be filed within 30 days of the date on which they are posted to your online student record.

Access for Students with Disabilities:

In keeping with the provisions and guidelines of the Americans with Disabilities Act, UCSC Extension makes every effort to make reasonable accommodation for those students with disability-related needs. If you require accommodation, please contact our Student Services Office at least 2 weeks prior to the event or course. The

phone number to call is (408) 861-3749. If you need to use the California Relay Service, that number is (800) 735-2922. For more information, visit: http://www.ucsc-extension.edu/student-services/ada.