Python Programming Fundamentals

Course Number: CSE-41273
Course Start Date: 07/05/2022
Course End Date: 09/03/2022

Instructor Information

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Virtual Office Hours: Tuesdays 5 PM - 9 PM Pacific time (see below).

Communication Policy:

Please contact me by email. During my "office hours", I will be monitoring emails closely and should be able to get back to you within 1 hour, usually less. **IMPORTANT:** Outside of office hours, I will answer your emails within 12-24 hours of receiving them. Usually I can answer them within a couple of hours, but often it is sooner if I'm at my computer.

Welcome!

I am happy to be adding to your understanding of the Python programming language! **Please don't hesitate to email me with any questions or issues you have.** I can't help fix anything if I don't know about it.

Course Purpose and Prerequisites

This course is for people who are programmers and have taken (at least) an introductory course like Introduction to Programming (CSE-40028) or have a basic knowledge of the Python programming language. If you have experience in other programming languages, you are welcome to join the class. Most of my students come from a background in another programming language. If you have no programming experience, this class will probably go too fast for you. Contact me if you have questions.

Course Goal and Objectives

The goal of this course is to teach the fundamentals of the Python programming language. There is, of course, **much** more to learn beyond this class.

Learning Objectives

By the end of this course, the student will be able to:

- Write command-line programs with documentation
- Make Python modules that can be imported to other Python programs
- Add documentation to modules for automatic documentation usage
- Understand basic OOP principles and how to create new classes or classes derived from other classes
- Create unit tests and follow test-driven development principles
- Use the Python standard library modules
- Install Python packages into a project to use them

Course Materials/Textbooks

Highly Recommended Textbooks:

Think Python: How to Think Like a Computer Scientist 2nd Ed. by Allen B. Downey
ISBN-13: 978-1491939369
ISBN-10: 1491939362
This book is an excellent book, not just about the basics of Python, but also for its discussion of the processes of making a program and the great examples. If you're still something of a programming beginner, this is an excellent book to have. If you plan to go into data science or machine learning, his other books are excellent too.

Illustrated Guide to Python 3 by Matt Harrison
ISBN-13: 978-1977921758
ISBN-10: 1977921752
It's quite inexpensive and very helpful in explaining some of the concepts. Has some illustrations that help show what Python does.

Supplemental Books:

Automate the Boring Stuff by Al Sweigart
ISBN-13: 978-1593275990
ISBN-10: 1593275994
An excellent learning tool. It is oriented towards people who are not necessarily doing "development" in Python, but perhaps need to write scripts to automate tedious things that they have been spending too much time doing by hand. Look it up on the internet for a free online version.

Fluent Python by Luciano Ramalho
ISBN-13: 978-1491946008
ISBN-10: 1491946008
This book is especially good to have if you come to Python from other programming languages. It is also great to refer to when continuing with your Python knowledge. From the book description: "Author Luciano Ramalho takes you through Python's core language features and libraries, and shows you how to make your code shorter, faster, and more readable at the same time."

Course Overview

This course has 8 sessions. The topics are as follows:

Session 1: Setup and Python Basics

Set up Python and a virtual environment. Python Basics: variables, operators, functions, modules, strings, basic data types, etc. String formatting & printing.

Session 2: More Python Basics

Looping, expressions, and comprehensions. Generators, iterables and iterators. List comprehensions vs generators. PEP8 coding style guide, PEP257 docstrings, best practices.

Session 3: CLI programs and Exceptions

The command-line interface and argument handling. Exceptions and exception handling.

Session 4: Classes in Python

How classes work, when to use them. Properties and decorators.

Session 5: More Classes.

Python's collections library. Inheritance, and how it works.

Session 6: Debugging. Iterables and Iterators

Pdb, the Python debugger. More in-depth look at iterables and iterators and useful functions from the itertools library. Making custom collections.

Session 7: Unit Testing. Files and File Handling

Writing unit tests. Test-driven development principles. Files, CSV files, fake files. Context managers.

Session 8: Where to Go from Here?

Making code more Pythonic. More about standard libraries and third-party packages, A brief look at using Python for web development, web scraping, and Data Science.

Online Course Structure

The course is organized using the course menu (left side of your screen):

Announcements	This is the first page you see upon entering your course. Your instructor will post weekly announcements and reminders here.
Introduction	Contains an introduction to the course and instructor biography.
Syllabus	Contains the course outline, learning objectives, weekly assignments and course details.
Lessons	If it's a fully online course, this section will have the instructor's weekly audio/image lectures. The lectures are self-paced and can be replayed like a video movie (start, pause, rewind, etc.).
Discussion Board	If you have general questions, please post them here. Never post code that is part of the homework!
Assignments	Assignments, quizzes, Course Evaluation, and the Final

	Exam are available here.
Resources	Additional readings and handouts, web site links, etc.
Contacts	Instructor, student services and online learning support contact information is listed here.
Tools	Check your grades (My Grades), or access the Blackboard User Manual (User Manual) here.

Requirements

In order to satisfy course requirements, class participants must complete all course quizzes, exams, and assignments on time (on or before the due date.

IMPORTANT! Grading policy, including penalties for late submissions, can be found on the class website. **Contact the instructor as soon as you can if there is a problem with completion of a quiz or homework.** Assignments sent with the wrong naming convention or in the wrong format will be considered late until they are sent correctly. Late assignments will be accepted at the discretion of the instructor and cannot be accepted more than 1 week late.

Expect and plan for contingencies and technical problems (they WILL happen!).

Grades

Grades are based on points and the letter grades are given as follows:

A+	97-100
A	94-96
A-	90-93
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	74-76
C-	70-73
D+	67-69
D	65-66
F	0-64

You may check your grade anytime by clicking **Course Tools** and then **My Grades**. This will show you the points you have earned so far in this course.

Weighted Grades (approximate)

Assignments	75%
Final assignment	25%
TOTAL	100%

About Discussion Board Participation

Never post homework answers, even partial ones, to the discussion board! I prefer that you always email me! If there is something that I think everyone should know, I will make a post about it myself.

About Assignments/Quizzes

The quizzes and assignments must be completed by 11:59pm, Pacific Time (PST or PDT as appropriate), on the day of the deadline. Late assignments will be penalized. Please contact the instructor if you are going to be late with your assignment/quiz. **Plan ahead** and give yourself plenty of time to complete each one.

Assignments will be programs that you will write based on the lesson(s). Upload **only** the files instructed in the assignment.

Campus Emergencies

In the event of an emergency, information will be posted at UC San Diego Extension (http://extension.ucsd.edu/). Extension students must access the website to find out the status of the emergency situation. Email and or phone lines may not be accessible. Information will be updated online as the situation progresses and an ALL CLEAR will be posted once the situation is resolved.

Code of Conduct

All participants in a course at UC San Diego Extension are bound by the University of California Code of Conduct.

Academic Honesty Policy

The University is an institution of learning, research, and scholarship predicated on the existence of an environment of honesty and integrity. As members of the academic community, faculty, students, and administrative officials share responsibility for maintaining this environment. It is essential that all members of the academic community subscribe to the ideal of academic honesty and integrity and accept individual responsibility for their work. Academic dishonesty is unacceptable and will not be tolerated at the University of California. Cheating, forgery, dishonest conduct, plagiarism, and collusion in dishonest activities erode the University's educational, research, and social roles.

If students who knowingly or intentionally conduct or help another student perform dishonest conduct, acts of cheating, or plagiarism will be subject to disciplinary action at the discretion of UC San Diego Extension.