ACES Learning Center
13581 Pond Springs Rd. Suite 200
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Python II Summer Syllabus

Textbook:

http://www.davekuhlman.org/python_book_01.pdf
http://www.tutorialspoint.com/python/python_tutorial.pdf
https://www.codecademy.com/learn/python

Material Covered

The Python II course is the continuation of the Python I course. We assume students have successfully taken the Python I course or passed the Python I placement test.

The Python II course will continue to explore the Python language and fundamentals including (1) more Python data types such as Dictionaries and Tuples (2) Introducing Python class and briefly discussing class, inheritance, modules and object-oriented programming concept; (4) Understanding Python exception handling; (4) Starting to build some simple Python apps. The simple applications will help students in practicing what they learned from the class, in becoming comfortable to use Python in their day-to-day school tasks, and in inspiring their interesting in programming.

After successfully completing the Python II course, students will have the **Python language foundations** to create Python applications that can solve some real problems of mathematics, modeling, computation, and even USA computing Olympiad.

Class Structure

Except for the first day, the first hour is spent reviewing the previous day's homework, material, and quiz or exam. Over the next two hours we cover new material, with example problems solved by the students throughout. During the last 30 minutes there is a comprehensive quiz with an emphasis on that day's material and in-class problem solving exercise. On Fridays, there is only one hour of new material followed by the overview of the materials taught in the week, and then the students take an hour-long comprehensive exam. Each class will include three breaks of ten minutes each.

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Schedule:

Date	Topic	Objective
Week 1		
Monday	Welcome, Installing Python and Python-I course knowledge review	Local environment setup; Installing Python if you haven't done so. Python II course introduction. Review of materials learned during Python I. Quiz for understanding student Python knowledge levels.
Tuesday	Introducing Dictionaries and Tuples	Introducing Tuples and understating the differences between Tuples and list. Introducing dictionaries and the concept of key-value pairs. The students will learn how to create, empty and remove a tuple. For Dictionary: the students will learn how to access values in dictionary, update and delete dictionary.
Wednesday	More Dictionaries	Manipulating dictionaries – adding new pairs, modifying value, removing pairs, modifying key, looping through a dictionary. List in a dictionary (value part of the pairs is a list).
Thursday	Classes and Object Orientated Programming	Overview Object-Oriented programming concept and terminology. Students will learn creating classes, creating instance objects, accessing attributes and destroying objects. Basic concept of class inheritance, overriding methods and so on.
Friday	Exceptions Handling	Learn to handle any unexpected error in your Python programs and debugging capabilities. The class will teach some standard exceptions and how to handle that.

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Week 2		
Monday	Introducing Python Modules	Introduction of Modules concept in Python. Play around with Modules such as using import and from…import and other statements. Understand what is the difference between classes and modules.
Tuesday	Terminal applications	By this point, you have learned enough Python to start building interactive apps. We will start building some simpler apps that run directly in your terminal.
Wednesday	Crawling the Web Application	Play around to build simple web application by using Python
Thursday	Parsing data files, Computational and data presentation	Using Python to parse data file and create simple report
Friday	Review and test	Review what learned in Python II and final exam.

- Do the reading and the homework. I will go over the material in class beforehand. Programming, like mathematics, is comprehensive. You need a lot more practice, especially writing your own programs.
- Write comments for major blocks. The comments help your source code readers and help yourself when you read it in a late time.
- Avoid cut/paste source code segments from somewhere else. Writing your own code helps in remembering the language, syntax and common class methods.
- Getting yourself familiar with online Python documents.