



# Boston University

## College of Arts and Sciences

### Computer Science Department

**CS 108: Application Programming**, Spring Semester 2011  
<http://www.cs.bu.edu/courses/cs108/>

#### **Class Meetings:**

Section A1  
Monday, Wednesday Friday  
9:00am - 10:00am @ PSY B53

**Aaron Stevens**, Lecturer

[azs@bu.edu](mailto:azs@bu.edu).

*Always include "CS108" in the subject.*

Office hours @ PSY 228B:

Mon 2:00-4:00pm; Thu 1:00-3:00pm and by appointment

#### **Lab Meetings:**

Section A2 Thursday 9:30am - 11:00am  
@ CS teaching lab (EMA 304)

**John Magee**, Teaching Fellow

[mageejo@cs.bu.edu](mailto:mageejo@cs.bu.edu)

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Tutoring hours (@ the undergrad CS lab):

Tue 3:30-5:30pm; Thu 11:00am-12:00pm;  
and by appointment

#### **Course Description**

CS108 is an introduction to procedural and object-oriented programming in the Python programming language. After mastering this semester's course material, students will have the tools necessary to build an interactive data-driven web application (i.e. Facebook).

Our emphasis in teaching programming in this course centers on the following:

1. Programming Concepts – recognizing and understanding the fundamental constructs present in all programming languages
2. Design Methodology – Using abstraction to simplify complex problems into concrete subtasks
3. Algorithmic Thinking – Defining the process used to glean information from data, and being able to convince oneself of its correctness
4. Literate Programming – Writing programs which are clearly structured and can be read by a human as well as a machine
5. Methodical and efficient development of computer programs using step-wise refinement and incremental testing and debugging

#### **Teaching/Learning Method**

This course will follow a rigorous schedule of assignments. Each assignment corresponds to a section of the course content and textbook. Failure to keep up with the assignments will result in your failing the course. Each session builds on the prior session and is a required building block for the following section. It is very difficult for you to be successful in the course if you miss any class sessions.

## Why Python?

Python is a remarkably powerful dynamic programming language that is used in a wide variety of application domains. Some of its distinguishing features include:

- very clear, readable syntax
- natural expression of procedural code
- intuitive object orientation; very high level dynamic data types
- extensive standard libraries and third party modules for virtually every task

## What You Need to Know About Computer Programming<sup>1</sup>

I believe anyone can succeed at learning to program. This is a first course in computer programming, and there are no formal pre-requisites. The only expectation of students' computer skills before taking this class is to be comfortable with using email, web browsing, and copying and pasting text. In addition, familiarity with high school-level algebra (e.g. MA 118) is assumed.

In addition, you will need time, and this is more important than you can imagine. Many people believe that computer programming is extremely difficult, and that the code is written in some arcane syntax understandable only by experts. Although some parts of the process are indeed complex, most of the source code required for homework assignments can be easily understood.

So, what makes programming so hard? It's not the difficulty: It's the time required to achieve any decent results. The homework assignments will take time, so make sure you have plenty of it.

## Books and Software

Required: [Python Programming: An Introduction to Computer Science](#), by John Zelle. Franklin, Beedle, & Associates, publishers, 2004. ISBN 1-887902-99-6.  
*Available at the bookstore, and on reserve at the Science and Engineering Library.*

Handouts and/or web articles will be assigned for materials not covered in the textbook.

Online Python Resources: [Python Documentation](http://www.python.org/doc/)  
<http://www.python.org/doc/>

[A Byte of Python \(an online wikibook\)](http://swaroopch.info/text/Byte_of_Python:Main_Page)  
[http://swaroopch.info/text/Byte\\_of\\_Python:Main\\_Page](http://swaroopch.info/text/Byte_of_Python:Main_Page)

[How to think like a computer scientist: learning with Python, 2nd edition.](http://openbookproject.net//thinkCSpy/)  
by Jeffrey Elkner et. al. <http://openbookproject.net//thinkCSpy/>

Python Software: We will be using the Python programming language, which is available for Linux, Windows, and Macintosh computers (among others).  
It is available on the lab computers at EMA 302 (the undergraduate CS lab).

We will be using version 2.6.4, which you can download for free online.  
<http://www.python.org/download/releases/2.6.4/>

IDEs [An Integrated Development Environment](#) is a tool for browsing source code, running programs, and debugging logical errors. You may use any that you like. The labs have an IDE called IDLE installed – it comes with Python. Another IDE I like is Wing 101, which is available for free at <https://wingware.com/>.

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<sup>1</sup> Adapted from text in "Core Techniques and Algorithms in Game Programming," Daniel Sanchez-Crespo Dalmau.

## Grading

The following percentages are tentative and may be changed at my discretion at any time:

Weekly Homework Assignments (about 12)	30% **
Scheduled Quizzes (6)	20% **
Final Exam (written)	20%
Final Exam (practical lab component)	10%
Final Project	15%
Teaching labs attendance/submission	5%
Attendance and participation: I will award up to 3 bonus points for perfect or near perfect attendance, participation/asking questions, and 2-minute quizzes*.	3% BONUS

*\* 2-minute quizzes are occasional, unannounced, single-question quizzes that will be given sporadically throughout the semester. Points will be awarded for attendance and answering the question correctly.*

*For labs, points will be awarded for attendance as well as submitting your work done during the lab.*

*\*\* At my discretion, the lowest one homework score, and the lowest one quiz score, will be dropped.*

***The last 3 regular homeworks and the final project are absolutely required, and these grades will not be dropped under any circumstances.***

## How to Prepare for Quizzes and the Final Exam

**The most effective strategy is active recall.** Reading the book, notes and examples alone will give you a **false sense of familiarity**. Instead, you must **actively digest the class material**, and practice your recall of it in **question and answer form**.

After each class meeting, review the class notes and examples, and especially points that I spend time elaborating upon. For each of these “main points” – there are probably about 4-6 of these per class meeting – you should write out a challenging question about the point, and prepare the answer.

By actively preparing questions that you know you can answer, you will be surprised how many of those show up on the quiz/exam.

## Getting Help With Homework

**The homework assignments in this class will be very challenging and often time consuming. Work on homework assignments as soon as they are given.** Plan your time so you can so you can ask questions in class and get assistance in the labs and tutoring hours.

If you get stuck, the teaching fellow and I are here to help you. The best avenue for getting help is to email your TF, or to come to office hours. Emails will be answered within 24 hours, often sooner.

## Policies and Miscellaneous

**The official administrative business of this class will be conducted by email.**

Grade questions/disputes, notification of absence, etc. will be processed via email so that we both have a written record of what was agreed.

**Attendance and discussion/asking questions are expected and will be reflected in your grade.**

If you must be absent, please email me in advance to let me know why you won't be in class, and to let me know what you will do to keep up with the assignments.

CS108 is not a correspondence course. Inadequate attendance is sufficient grounds for a grade of F.

**Lab attendance and submission of the lab work is required.**

Lab work is not "graded" like a homework assignment, but rather it is checked for submission time/location for attendance purposes and for completion.

Late lab work will be accepted within 4 days, but only for completion credit (not attendance).

**Assignments are due on the date stated on the homework assignment (to be posted on web).**

- Assignments received within 0-24 hours of the deadline will be accepted with a 10% penalty.
- Assignments received within 24-48 hours of the deadline will be accepted with a 20% penalty.
- Assignments received more than 48 hours past the deadline will not be graded.

**There will be no make-up quizzes or exams.**

If you have to miss a quiz for a medical reason or other extreme circumstances, you must inform me in advance; it will count as your "lowest one quiz score to be dropped." If you miss more than 1 quiz, you will receive a 0 for each missed quiz.

**No special make-up work will be accepted after the end of the semester. Don't even ask.**

In the event of a documented major medical problem, a grade of Incomplete will be given pending the submission of complete work. However, make up work "to improve one's grade" will not be accepted.

**It is the student's responsibility to retain all papers, quizzes, and exams that have been graded and returned.** Should these original documents not be available in the event of a grade dispute, I will need to defer to the own records.

Requests for review or re-grading of quizzes or homeworks should be brought to your TF or instructor in office hours or submitted by email, no later than 2 weeks after the quiz/homework has been returned, and no later than the last class day of the semester.

**Grades are not negotiable.** Don't even ask – just do the work and you'll get the grade you deserve. Of course, please bring any clerical grading errors to my attention by email and I will gladly fix them.

## Withdrawing from the Course

If you feel that you want to drop or withdraw from the class, please come talk to me about it as early as possible; I want to help you succeed, but you need to ask for help.

The last day to drop a class (without a "W" grade) is **Tuesday, February 22, 2011**

The last date to withdraw and receive a "W" grade is **Friday, April 1, 2011**.

## Plagiarism, Collaboration, and Collusion

All CS108 homework assignments are independent work.

It is the student's responsibility to know and understand the provisions of the CAS Academic Conduct Code, copies of which are available in room CAS 105.

In addition to the definition of plagiarism in the CAS Academic Conduct Code, **with respect to CS108, plagiarism is specifically defined to include (but is not limited to) the following:**

- collaboration on the code you write
- copying any part of someone else's program, even if you have permission and/or have modified the code
- sharing or giving your code or even a subset of your code to another student to review
- reviewing another student's solution (including from past semesters)

It is my policy to use automatic plagiarism detection software, and suspicious similarities will be uncovered. I am required by Boston University and the College of Arts and Sciences to refer cases of academic misconduct to the Dean's Office. The University takes acts of cheating and plagiarism very seriously; first time violators are routinely suspended for a semester.

### **What is acceptable cooperation?**

Cooperation is recommended in understanding programming concepts and system features. You are encouraged to discuss the labs, the homework problem statements and expected output, and to seek and receive help with the Python programming language and any IDE or other debugging tools.

However, each student must write his or her own code and other deliverables independently.