Computer Science 1 — CSci 1100 — Fall 2016
Syllabus

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Hours	Tues 2:00 - 3:30 Thur 2:00 - 3:30	Mon, Thurs after class until 5:00

Overview

This course is an introduction to computer science emphasizing computational thinking, problem-solving, small-scale programming, and applications. This includes basic programming constructs such as data, variables, functions, conditionals, loops, lists, files, sets and dictionaries. It also includes, especially in the latter part of the semester, object-oriented programming and problem solving. Applications will include web-centric computing, image processing, numerical computing, and graphics. Previous programming experience is neither required nor expected.

Learning Outcomes

1. Demonstrate proficiency in the purpose and behavior of basic programming constructs.
2. Design algorithms and programs to solve small-scale computational programs.
3. Write, test and debug small-scale programs.
4. Demonstrate an understanding of the wide-spread application of computational thinking to real-world problems.

Python

All programming assignments this semester will be written in Python, an interpreted language widely-used in both academic and commercial software development. Much of the original Google search engine was written in Python. Python has a simple syntax, a powerful set of programming primitives, and a rich set of libraries, making it ideal for classroom learning and for rapid prototyping.

Textbook

We will use the University of Toronto book, *Practical Programming: An Introduction to Computer Science Using Python* by Campbell, Gries, Montojo and Wilson. This is available in both print and electronic versions. While purchase of this book is not mandatory, we will follow its order and coverage fairly closely. The examples we use in class will largely complement rather than repeat the ones in the book.

Very important: you must have the **second edition** of this text because it works with Python 3.5 which we will use in this class, where as the first edition used Python 2.7. If you purchased the first edition this summer from the campus book store you can return it for a full refund.

Lectures and Labs

Lectures will be held Mondays and Thursdays from 12:00 - 1:20 in Darrin 318 (Dr. Turner) and 2:00 - 3:20 in Darrin 308 (Prof. Stewart). Lab sections meet on Tuesdays and Wednesdays. See the RPI on-line schedule or the course web site (below) for times and locations.

Course Website for Lecture Notes, Schedule, Code, Etc.

Lecture notes, code, the schedule, and software installation instructions will all be posted at

`http://www.cs.rpi.edu/academics/courses/fall16/cs1/`

Piazza

We will be using Piazza for announcements, on-line discussions, and posting of both homework assignments and lab exercises. You must sign up for an account on

`http://piazza.com/rpi/fall2016/csci1100`

using your `rpi.edu` email address. You should check this site at least once a day for announcements and discussion, and much more often when you are working on assignments and prepping for exams. Better yet, sign up on Piazza to receive email alerts of postings.

What to post on Piazza? What not to post? Use common sense. Please **do** post questions about lectures, labs, homeworks and tests. Choose Piazza instead of emailing Prof. Stewart, Dr. Turner or a TA, and make sure that other students can see your questions. (In other words, don't use piazza for a private chat with the instructors.) Your posting can be anonymous to other students, but it will **not** be anonymous to the instructors. Before you post, check what has already been posted so that you don't repeat a question. Do **not** post a significant section of code you have written for a lab or a homework problem, but instead post questions about **how** to find and fix an error or about **what** an error message might mean. Help with debugging your code is best done one-on-one during office hours, lab and extra help sessions.

Lab Sections

Each lab will be led by a graduate student TA, assisted by three undergraduate programming mentors. Assignment of TAs to lab sections will be announced on the course website. Get to know your TA, your mentors, and other students in your lab sections. Your TA will get to know you. Your TA is your first point of contact for this course. You may attend the office hours of the instructors or of any TA, not just the one supervising your lab. Office hours will be posted on the course website.

Requirements and Grading

Semester requirements will include a combination of lecture exercises, labs, homeworks, tests and a final exam. The weights in determining the semester average are as follows:

Lecture Exercises:	4%
Labs:	13%
Homeworks:	33%
Tests:	30%
Final:	20%

Letter grades will be computed from the semester average. Averages will be rounded to the nearest integer and assigned letter grades as follows:

Avg	Grade
≥ 93	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
60-66	D
≤ 59	F

Cut-offs may end up lower than this but will not be raised from here. Thus, for example, if you earn a 93 average you are assured of earning an A, regardless of what other students earn.

Lecture Exercises

Class attendance is strongly encouraged, but not required. What is required is the submission of solutions to *lecture exercises*. Each lecture will be divided into two (or three) segments of 25-35 minutes each. At the end of each segment you will be given a few short practice problems to work on to help you get started in your understanding and application of the ideas discussed. You will be given time during lecture to work on these problems, and students who work efficiently will have time to finish. You are encouraged to work with your friends and fellow students; the goal is to build your own understanding.

Students will have **24 hours after the start of lecture** to submit solutions electronically. Solutions will be graded completely automatically. We will practice with the Lecture 2 exercises in Lab 1 on Tuesday 9/6 and Wednesday 9/7, so these exercises will not be due until then. The 24-hour submission requirement will be imposed starting with Lecture 3 on Thursday 9/8.

There will be 23 lectures worth of exercises, each equally weight, and each student's best 20 will be counted towards their final grade. Since this gives each student a chance to miss up to three sets of exercises without affecting their grade, **we will not be accepting any excuses for missing lecture exercises**.

Labs

There will be 13 labs (numbered from 0 to 12), each one equality weighted. Labs will be designed so that students who prepare in advance and work diligently can earn full credit. Students **must** attend their assigned lab sections unless prior arrangements are made with the lab TAs. Lab instructions will be posted on the course website at the end of the week before the lab. Sometimes this posting will be the entire lab and sometimes it will be only a preliminary component of the lab.

Homework

There will be nine homework assignments given throughout the semester, which will usually be due on Thursday nights by 11:59:59 pm. Students will have a week to work on each assignment. The schedule is posted on the course website. Submission instructions will be provided on-line as well.

Tests and the Final

Three tests will be given during the semester on the date **shown in the on-line course schedule**. In addition, there will be a final exam during the scheduled finals period. The three tests during the semester will combine to count for 30% of the grade. To compute this, the best two test scores for each student individually will be worth 12% and the worst test score will be worth 6%. The cumulative final is worth 20%.

Lecture Notes

Prof. Stewart's lectures will be recorded and posted on-line. Lecture notes will be posted on the course website at least two days in advance of each class. Students are strongly encouraged to study these carefully, including the examples that are provided. Our experience in teaching this class has been that many questions students ask are already answered in the notes.

Homework Late Policy

Homework assignments must be submitted electronically by the deadline, as measured by our computers. Assignments that are a minute late are considered a day late! Each student will be given **three days** (whole or partial) of grace for late homework assignments. These grace days should be used carefully, and **no more than two** may be used for any one assignment. Once the late days have been exhausted, late assignments **will not be accepted** without a written excuse from the Student Experience Office.

As an example, if student X submits his/her 1st assigment 26 hours late, X will have used two late days and have only one day left. If X then submits another assignment 5 hours late, X will have used his/her last late day. If X then submits a 3rd assignment 1 minute late, it will not be accepted.

Students should use their late days **carefully**, saving them for the latter part of the semester or, better yet, not using them at all. Save them for crashed computers, crashed

disks, failed software installations, and late semester crunches of having too many assignments due at once.

If there are extenuating circumstances that cause your homework to be late, such as a personal or medical emergency, please obtain an excuse from the Student Experience Office. Crashed computers, failed disk drives, and overwritten files **are not** considered valid excuses for late homework.

Grade Appeals

All grade appeals on labs and homeworks must be submitted within a week of receiving your grade. The same will be true of test grades. Students will be able to see all of their grades on-line.

Weighted Test Average and the Final Grade

Importantly, **students must have a weighted test average — including the final — of at least 50% to pass the course**. This is a firm rule and will be determined by the test average rounded to the nearest integer. Exceptions will not be made.

Academic Integrity

Student-teacher relationships are built on trust. For example, students must trust that teachers have made appropriate decisions about the structure and content of the courses they teach, and teachers must trust that the assignments that students turn in are their own. Acts that violate this trust undermine the educational process. The Rensselaer Handbook of Student Rights and Responsibilities defines various forms of Academic Dishonesty and you should make yourself familiar with these. In this class, the following rules apply:

- You are encouraged to collaborate in labs as long as you write the final solution to the lab on your own.
- Homework submissions should be largely your own work, but you are allowed to discuss the goals of an assignment and the overall design, testing and debugging of the solution. Your code should be your own. Program submissions — especially longer ones — that are too similar to have been written independently will be flagged electronically (comparing all submissions across all sections), and students will be asked to explain the cause of the similarity. Students who do not submit their own work will receive a 0 on the assignment and will likely receive an additional overall grade penalty, depending on the severity of the infraction. Typical penalties are 5 to 10 percentage points subtracted from the semester average. Students caught a second time will receive an F in the course. All infractions will be reported to the Dean of Students office.
- Copying, communicating or using disallowed materials during an exam is cheating, of course. Students caught cheating on an exam will receive an F in the course and will be reported to the Dean of Students office.