Syllabus
CMSC 140: Introduction to programming

Fall 2016

Time:	MWF 2pm
Location:	Ruffner 354
Website:	`http://cs.longwood.edu/courses/cmsc140`

A first course in computer programming, intended for students with no previous experience in writing computer programs. Emphasis will be placed on practical programming skills; assignments will primarily use the Python programming language. Students will cover the fundamental control structures and will learn to process real data stored in sequential lists and in key-value pairs. 3 credits.

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Office hours:	Mon 10–11am; Wed 11am–noon; Thu 10–11am; Fri 1–2pm

Overview

In the last decade, we have seen huge increases in the computational thinking required in a wide variety of disciplines; across the natural and social sciences, the arts, and even in the humanities, researchers and practitioners are finding that they have data, they need to process it, and no completely off-the-shelf solution will do. They need to write a program to solve a problem.

In this course, we will introduce the concepts and ways of thinking required to write straightforward programs to process a variety of kinds of data.

Textbook and resources

The textbook is *Python for Everyone*, 2e, by Cay Horstmann and Rance Necaise (ISBN 978-1-119-05655-3). There will be regular in-class and out-of-class assignments drawn from the book; you should bring it to every class.

The language of the course is Python 3, and you'll need to install it on your laptop, along with the IDLE editor. You will frequently be expected to bring your laptop, with Python and IDLE already installed on it, with you to class.

Course objectives

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

1. write programs to handle both numeric and textual data,
2. use standard programming control constructs such as if/else, loops, and functions,
3. read and process real-world data using flat text files,
4. count, filter, and transform data presented in sequential (list) form, and
5. produce descriptive statistics on numeric data.

Content

Graded work

I figure that I have about 8-10 hours of your time every week, including class time as well as reading, practice, homework, and projects. If you find you're spending more time than this, please do come discuss it with me, and we'll see what we can work out. The work you do for this course will be evaluated as follows:

Preparation and participation. You need to be an active participant in this class: present, prepared, and on-task. The point for each day will be assigned using one of the following rubrics:

- Basic attendance: If you're there, you get the point!
- Participation: **1**: Attentive and on-task. **½ or 0**: Substantially late, sleeping, fussing with cellphone, etc.
- Reading quiz: Three questions, open-notes. **1**: Demonstrated that you read the assigned reading. **½**: Some correct work on the quiz.

I will not, in general, tell you in advance which one I'll use on a particular day. These points are collectively worth 10% of the grade.

Lab work (and homework). The central goal of the course is that you learn to program, so the bulk of the work you do will be "lab" work before, during, and after our assigned class periods. This work will make up 30% of the grade. Collaborative

Final project. Your final project in the course will involve working with a data set in your area, building a program to process that data, and writing up your results. Details will be given around midterms; the project will be worth 20% of the final grade. Collaborative

Exams. There will be two exams, one in early October and one during the finals period. Each will have a "practical" (take-home) component and an in-class portion. The final will not be explicitly cumulative, though of course the material from the second half of the course builds on the earlier stuff. **You are not permitted to discuss the exams *at all*, with anyone other than me.** Each exam is worth 20% of the grade. Non-collaborative

Breakdown

Prep/participation	10%	
Lab/homework	30%	
Final project	20%	
Exams	40%	(20 each)

Grading scale

I tend to grade hard on individual assignments, but compensate for this in the final grades. The grading scale will be approximately as follows:

A−	[85, 90)	A	[90, 100)	[1]	
B−	[70, 75)	B	[75, 80)	B+	[80, 85)
C−	[55, 60)	C	[60, 65)	C+	[65, 70)
D−	[40, 45)	D	[45, 50)	D+	[50, 55)

While there will be no "curve" in the statistical sense, I may slightly adjust the scale at the end of the term if it turns out some of the assignments were too difficult.

[1] Alas, no A+, unfortunately.

Calendar (tentative)

Days marked **–L** mean you should bring your laptop that day, as we will be doing lab work.

Wk	M	W	F
	August		
1	**22** — Introduction The idea of an algorithm	**24 –L** 1.1–1.3 Hello world	**26** 1.6 Errors
			September
2	**29** * 1.7 Algorithms	**31** 2.1–2.2 Arithmetic and variables	**2 –L** — (continued)
3	**5** 2.4–2.5 Strings Input and output	**7 –L** — (continued)	**9 –L** — Ch. 2 practice
4	**12** — (continued)	**14** 3.1 `if`, `else` control flow	**16 –L** 3.2 Relational operators on numbers, strings
5	**19** 3.3–3.5 Nested `if`, `elif` Flowcharts	**21 –L** — (continued)	**23 –L** — (continued)
6	**26** 3.7 `and` `or` `not`	**28** 3.6, 3.8 Test cases More strings	[VP debate prep **no class**]
	October		
7	[VP debate prep **no class**]	[VP debate cleanup **no class**]	**7** ** — **Midterm exam**
8	**10** 4.1–4.3 Loops Flowcharts	**12 –L** 4.6 Debugging loops `for`	**14** *** 6.1–6.2 Lists and list operations

* **29 August**: Deadline to add/drop classes (5pm)

** **7 October**: Deadline to elect pass/fail option (5pm)

*** **14 October**: Deadline to withdraw from a class (5pm)

Wk	M	W	F
	October		
9	**17 –L** — (continued)	**19 –L** 7.1–7.2 Files	**21 –L** — Loop setup practice
10	**24** 4.5 Standard loop algorithms	**26 –L** — (continued)	**28** 6.3 Standard list algorithms
		November	
11	**31 –L** — (continued)	**2 –L** 4.8 Standard string algorithms	**4 –L** 4.7 Nested loops
12	**7** 8.1 Sets	**9** 8.2 Dictionaries	**11 –L** — (continued)
13	**14** 5.1–5.4 Functions	**16 –L** — (continued)	**18** 5.5, 6.4 Functions on lists
14	**21** 6.7 Tables	[Thanksgiving **no class**]	[Thanksgiving **no class**]
			December
15	**28** 7.5–7.6 Exceptions	**30** — Project work day	**2** — **Final project due** Debriefing and future plans

Final exam: Tue 6th, 3–5:30pm

Policies

Support

This is an introductory course. That means that what is covered is an important basis for other work in the field, *not* that it is supposed to be obvious, or easy. So don't feel bad if something doesn't click right away. Never hesitate to ask me a question; I'll usually at least give you a hint as to where to look next.

I'm in my office a lot (not just during posted office hours). Feel free to come in and ask questions (or just to talk). If you can't catch me in my office, email is probably your best bet.

You should also make use of your fellow students as resources. While you can't copy each other's work (see the collaboration policy), studying together is a great idea, and asking and answering questions of other students is actively encouraged.

Accommodations

If you have any special need that I can accommodate, I'm happy to do so; come speak to me early in the term so we can set things up. If you have a documented disability, you should also contact Longwood's Office of Disability Resources (Graham Hall, x2391) to discuss some of the support the college can offer you. All such conversations are confidential.

Honor code policy

Above all, I ask and expect that you will conduct yourself with honesty and integrity—and not to ignore the other ten points of the Honor Code, either. Take pride in what you are capable of, and have the humility to give credit where it is due.

The two main forms of academic dishonesty are "cheating" and "plagiarism". "Cheating" is getting help from someplace you shouldn't, and "plagiarism" is presenting someone else's idea as if it's your own. If you ever find yourself inclined towards either of these, know that there are always other, better options. Persevere! See my website[2] for some discussion and examples of how

[2] `http://cs.longwood.edu/~dblaheta/collab.html`

to steer clear of these problems, and feel free to come talk to me if you need help finding some of those other options (even if it's for another course).

Cheating or plagiarism (on any assignment) will normally receive a *minimum* penalty of a lowered *course* grade, ranging up to an F in the course. Cases will also be turned in to the Honor Board. But: I believe in your potential, and I hope that you will, or will grow to, observe this policy not simply to evade punishment but positively as a matter of character.

Attendance and late policy

Attendance is required, and assignments must be turned in on time. That said, if you have a good reason to miss class or hand something in late, I tend to be fairly liberal with extensions if you ask in advance. (Good reasons do include assignments due for other classes.) (And medical and family emergencies are exempted from the "in advance" part, of course. But contact me ASAP.)

Frequent absence will result in a lowered participation grade; habitual absence may in extreme cases result in a failing grade for the class. *Unexcused* late assignments will normally be given a zero.

Inclement weather policy

I don't plan to cancel class for weather unless the entire college shuts down. If you are commuting or are otherwise significantly affected by a weather event, use your own best judgement; and if you do miss class for this reason, contact me as soon as possible to make up missed work.

Early bird policy

Nobody's perfect, and on occasion an assignment gets written a little unclearly (or, once in a while, with an actual error in it). If you catch one and bring it to my attention early, so that I can issue a clarification or correction to the rest of the class, there'll be some extra credit in it for you.