

CMPSCI 119
Spring 2018
Introduction to Programming with Python

Professor William T. Verts

Class:

Lectures: Monday, Wednesday, Friday 1:25PM–2:15PM, ILC S211

Office Hours and Email:

LGRC A357, Office Hours M/W/F 2:45-3:45, and appointments at our mutual convenience.

`verts@cs.umass.edu` Personal, for asking questions. Put CMPSCI 119 in the subject line.

`literacy@cs.umass.edu` For submitting on-line materials. Put CMPSCI 119 in the subject line.

I read all email daily, but do not expect a speedy reply. I might not reply at all if the question is something I can address in class. Do NOT email attachments to me; they will be deleted. Do not call me at home.

TA: The TAs will hold office hours in LGRT 222, perform the grading, and be available to assist in all aspects of this course. Hours to be arranged. TA office is shared by all TAs and graders for all my courses.

Books: REQUIRED: *Computer Science Companion*, REVISED 3RD Edition, 2017 Printing, ISBN 9781524943998, ~\$28, by me. (It is OK if you have the unrevised 3RD edition from last year, but the revised version has new information, errors have been corrected, and it is now in color.) The *Computer Science Companion* is a required text for COMPSCI 105, 119, 120, and 145.

OPTIONAL: *Introduction to Computing and Programming in Python – A Multimedia Approach*, 4TH Edition Mark Guzdial & Barbara Ericson, 2015, ISBN 9780134025544, \$97, Pearson (Prentice Hall).

Web: <http://people.cs.umass.edu/~verts> (then follow the link to the 119 page), or:
<http://people.cs.umass.edu/~verts/cmpsci119/cmpsci119.html>
<http://people.cs.umass.edu/~verts/cmpsci119/quizzes/quizzes.html>

Social Media:

Please do not “friend” me on Facebook, Linked-In, or other social networks. I reserve Facebook for relatives, hiking buddies, and friends from high-school. I do not often post messages on Twitter.

Course Scoring (percentages may change according to number and type of assignment):

Midterm 1	15%	Monday, February 26, in-class. Open book, open notes.
Midterm 2	15%	Friday, March 30, in-class. Open book, open notes.
Final Exam	20%	Tuesday, May 8, 1:00pm, Goessmann 64. Open book, open notes.
Homework	10%	Occasional (assigned homework, in-class exercises, on-line homework, etc.)
Projects:	40%	Throughout semester. Late penalties will apply as appropriate.

Letter grades will be assigned according to final computed course score:

A ≥ 90%, A- ≥ 88%, B+ ≥ 86%, B ≥ 80%, B- ≥ 78%, C+ ≥ 76%, C ≥ 64%, C- ≥ 62%, D+ ≥ 60%, D ≥ 50%, F < 50%. Missing either of the midterms, or the final exam, incurs an automatic F for the course. Fractional final course scores are rounded to the nearest integer. For example, 87.49999 rounds down to 87 (B+), while 87.50000 rounds up to 88 (A-).

Computer: You may use either a Windows PC or an Apple Macintosh. The programming environment we use is JES 5.0 (Jython Environment for Students), located at <https://github.com/gatech-csl/jes/releases> for free download. There are versions that run on both PCs and Macs. In addition, “standard” versions of Python may be downloaded from <http://www.python.org/>, and Mac users have Python already installed, accessible from the Terminal application. From time-to-time I will demonstrate software that runs only on a Windows PC; Mac users may wish to install Parallels and Windows 7, or Crossover Mac, in order to run these programs.

Final Notes:

1. **DO YOUR OWN WORK, INCLUDING HOMEWORK AND LAB WORK.** You may discuss homework and lab assignments with other students, but you may not share files or disks. Upon discovery of duplication, I will contact you for a conference, as required in the guidelines set out by the University of Massachusetts Academic Honesty Policy, and we will resolve the issue according to those guidelines. See the document at:
http://www.umass.edu/dean_students/academic_policy/
2. **Do not** ask for extra work after the end of the semester to boost an undesirable grade. I never grant such requests.
3. Please contact me directly if you have any concerns about the running of the course, the TAs, grading, etc.

		Monday	Wednesday	Friday
JANUARY	1	January 22 – First Lecture – What is programming all about? (<i>It's mostly debugging!</i>)	January 24 – Data, data types. Interactive Python. <i>Debugging.</i>	January 26 – Easy programs. def, return, print, and raw input. <i>Debugging.</i>
	2	January 29 – Python if statements. The pass statement. <i>Debugging.</i>	January 31 – More on def, parameter passing. Python while statement. <i>Debugging.</i>	February 2 – Lists, tuples, and strings, more on functions. JES I/O functions. <i>Debugging.</i>
FEBRUARY	3	February 5 – while loops with lists and ranges, for loops with ranges. <i>Still debugging.</i>	February 7 – List comprehensions to create custom ranges. Writing to simple text files. <i>Debugging.</i>	February 9 – Introduction to graphics. Canvases and pixels. <i>Debugging.</i>
	4	February 12 – Graphics a la JES. Lines, rectangles, ovals, circles, color. Plotting text. <i>Debugging.</i>	February 14 – More on Color. Time delays. Creation of movies. <i>Debugging.</i>	February 16 – Intro to image processing. Image processing on one pixel at a time. <i>Debugging.</i>
	5	February 19 – Presidents Day HOLIDAY	February 21 – Random numbers. Sierpinski Gasket. <i>Debugging.</i>	February 23 – Review for midterm.
	6	February 26 – MIDTERM #1	February 28 – Command-line programming. Boolean & character functions. <i>Debugging.</i>	March 2 – Image filtering. Image mirroring and flipping. <i>Debugging.</i>
MARCH	7	March 5 – Passing functions as parameters in Python. <i>Debugging.</i>	March 7 – 3x3 filters (blur, edge detect, etc.). <i>Haven't we finished debugging yet?</i>	March 9 – Dithering and rotation of images. <i>Debugging.</i>
	8	March 12 – SPRING BREAK	March 14 – SPRING BREAK	March 16 – SPRING BREAK
	9	March 19 – Hierarchical decomposition. Nested functions. Sprites in 2D. <i>Debugging.</i>	March 21 – More on nested functions. Recursion. Complex Math. <i>Debugging.</i>	March 23 – String slicing and dictionaries in Python. <i>Debugging.</i>
	10	March 26 – Global variables. Writing text files redux. HTML & SVG files. <i>Debugging.</i>	March 28 – Review for midterm.	March 30 – MIDTERM #2
APRIL	11	April 2 – Linear blending in 2D and 3D. <i>Debugging geometry functions.</i>	April 4 – More on interpolation: blending lines and colors. <i>Debugging graphics.</i>	April 6 – Blending parabolas and cubics. <i>Debugging.</i>
	12	April 9 – Introduction to 3D orthographic projections. <i>Debugging.</i>	April 11 – 3D Lines and Polygons, image scaling. Hierarchical decomposition in 3D. <i>Debugging.</i>	April 13 – Introduction to the Sunrise Project, creating movies. <i>Debugging animations.</i>
	13	April 17 (TUESDAY) – 3D/4D/5D to 2D Projections. Thinking in higher dimensions.	April 18 – Polygon fill.	April 19 – Theory of sounds. <i>Debugging.</i>
	14	April 23 – Python for scientific computing. Polynomials. <i>Debugging.</i>	April 25 – Python from UNIX. <i>Debugging.</i>	April 27 – Catch-up Day. Showing student Sunrise projects. <i>No more debugging!</i>
	15	April 30 – Last Day of Class. Review of Course. Review for Final Exam.	FINAL EXAM: TUESDAY MAY 8 1:00PM GOESSMANN 64	