

CMPSCI 119
Spring 2017
Introduction to Programming with Python
Professor William T. Verts

Class:

Lectures: Monday, Wednesday, Friday 1:25PM–2:15PM, South College W245.

Office Hours and Email:

LGRC A357, Office Hours to be arranged. 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*, 3RD Edition, 2016 Printing, ISBN 978-1-5249-0236-0, ~\$24, by me,

OPTIONAL: *Introduction to Computing and Programming in Python – A Multimedia Approach*, 4TH Edition
Mark Guzdial & Barbara Ericson, 2015, ISBN 978-0-1340-2554-4, \$97, Pearson (Prentice Hall).

Web:

<http://people.cs.umass.edu/~verts>

<http://people.cs.umass.edu/~verts/cmpsci119/cmpsci119.html>

<http://people.cs.umass.edu/~verts/cmpsci119/quizzes/quizzes.html>

Twitter and other 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 27, in-class. Open book, open notes.
Midterm 2	15%	Wednesday, March 29, in-class. Open book, open notes.
Final Exam	20%	Wednesday, May 10, 1:00pm, South College W245. Open book, open notes.
Projects:	40%	Throughout semester. Late penalties will apply as appropriate.
Homework	10%	Occasional (assigned homework, in-class exercises, on-line homework, etc.)

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

A \geq 90%, A- \geq 88%, B+ \geq 86%, B \geq 80%, B- \geq 78%, C+ \geq 76%, C \geq 64%, C- \geq 62%, D+ \geq 60%, D \geq 50%, F < 50%. Missing any 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.

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.

Day-By-Day Schedule (Very Tentative):

		Monday	Wednesday	Friday
JANUARY	1	January 23 – First Lecture – What is programming all about? (<i>It's mostly debugging!</i>)	January 25 – Data, data types. Interactive Python. <i>Debugging.</i>	January 27 – Easy programs. def, return, print, and raw input. <i>Debugging.</i>
	2	January 30 – Python if statements. The pass statement. <i>Debugging.</i>	February 1 – More on def, parameter passing. Python while statement. <i>Debugging.</i>	February 3 – Lists, tuples, and strings, more on functions. JES I/O functions. <i>Debugging.</i>
FEBRUARY	3	February 6 – while loops with lists and ranges, for loops with ranges. <i>Still debugging.</i>	February 8 – List comprehensions to create custom ranges. Writing to simple text files. <i>Debugging.</i>	February 10 – Introduction to graphics. Canvases and pixels. <i>Debugging.</i>
	4	February 13 – Graphics a la JES. Lines, rectangles, ovals, circles, color. Plotting text. <i>Debugging.</i>	February 15 – More on Color. Time delays. Creation of movies. <i>Debugging.</i>	February 17 – Intro to image processing. Image processing on one pixel at a time. <i>Debugging.</i>
	5	February 20 – Presidents Day HOLIDAY	February 22 – Random numbers. Sierpinski Gasket. <i>Debugging.</i>	February 24 – Review for midterm.
	6	February 27 – MIDTERM #1	March 1 – Command-line programming. Boolean & character functions. <i>Debugging.</i>	March 3 – Image filtering. Image mirroring and flipping. <i>Debugging.</i>
MARCH	7	March 6 – Passing functions as parameters in Python. <i>Debugging.</i>	March 8 – 3x3 filters (blur, edge detect, etc.). <i>Haven't we finished debugging yet?</i>	March 10 – Dithering and rotation of images. <i>Debugging.</i>
	8	March 13 – SPRING BREAK	March 15 – SPRING BREAK	March 17 – SPRING BREAK
	9	March 20 – Hierarchical decomposition. Nested functions. Sprites in 2D. <i>Debugging.</i>	March 22 – More on nested functions. Recursion. Complex Math. <i>Debugging.</i>	March 24 – String slicing and dictionaries in Python. <i>Debugging.</i>
	10	March 27 – Review for midterm.	March 29 – MIDTERM #2	March 31 – Global variables. Writing text files redux. HTML & SVG files. <i>Debugging.</i>
APRIL	11	April 3 – Linear blending in 2D and 3D. <i>Debugging geometry functions.</i>	April 5 – More on interpolation: blending lines and colors. <i>Debugging graphics.</i>	April 7 – Blending parabolas and cubics. <i>Debugging.</i>
	12	April 10 – Introduction to 3D orthographic projections. <i>Debugging.</i>	April 12 – 3D Lines and Polygons, image scaling. Hierarchical decomposition in 3D. <i>Debugging.</i>	April 14 – Introduction to the Sunrise Project, creating movies. <i>Debugging animations.</i>
	13	April 18 (TUESDAY) – 3D/4D/5D to 2D Projections. Thinking in higher dimensions.	April 19 – Polygon fill.	April 21 – Theory of sounds. <i>Debugging.</i>
	14	April 24 – Python for scientific computing. Polynomials. <i>Debugging.</i>	April 26 – Python from UNIX. <i>Debugging.</i>	April 28 – Catch-up Day. Showing student Sunrise projects. <i>No more debugging!</i>
MAY	15	May 1 – Last Day of Class. Review for Final Exam.	FINAL'S WEEK	