Dear Incoming Astronomy Grads,

Your Fall quarter grad classes (ASTR 257 and ASTR 204) require Python programming. If you feel that you would benefit from going through some brief Python tutorials, we have compiled some resource below. To be clear, we expect many of you are proficient in Python (probably more proficient than your instructors), but if you’ve mostly programmed in other languages, it would be worthwhile to practice Python before classes start.

To define “proficient” we have two brief problems for you to try. These are optional and you don’t have to turn them in. If these problems are straight-forward for you, then you should have no problem with the programming in your Fall classes.

* Open the file test.fits in Python. Crop a 100x100 pixel region around the brightest star in the image. Save the cropped region as test2.fits.
* RUTH

If you can’t do these problems, or would just like some more practice, we’ve compiled some tutorials below.

**Basic Python for Astronomy**

There is a lab class at Amherst College that begins with an excellent set of Python tutorials:

<https://github.com/spacegal-spiff/AST337-Fall2018>

In the folder AST337-Fall2018/Homeworks/JupyterExercises/ there are two exercises that take you through installing Python, programming in the Jupyter environment, basic mathematical programming, arrays and plotting. This is an excellent place to start.

Once you’ve done that, Lab 1 (/AST337-Fall2018/Labs/Lab01/) goes through an exercise to read in tabular data and plot it.

**I/O with .fits files**

The same lab class has a lab that involves reading in a .fits file (standard astronomical image file) and displaying it (/AST337-Fall2018/Labs/Lab04/).

More generally, here is astropy’s description of its fits utility:

<https://docs.astropy.org/en/stable/io/fits/>

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