Astronomy 300 — Autumn 2015

Introduction to Programming for Astronomical Applications

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Class Meetings: PAB B356 on Wednesdays from 1:30 - 3:20.

Background: This course offers an introduction to exploring, manipulating, and displaying astronomical data using modern programming languages. Python will be our primary language, but other topics such as the AWK and IDL computer languages, the LaTeX scientific publishing package, and regular expressions will be covered.
Recommended for astronomy majors planning to take 400-level astronomy courses, to peruse individual research projects, or to apply for Research Experience for Undergraduate appointments (REUs). The examples used in class and assigned as homework will be specific to the field of astronomy.

Class Mailing List: I will be using the class mailing list during class. Please make sure to monitor your `u.washington` email account, or set it to forward email to the account you usual read.

Assignments: There will be weekly assignments handed out in class in Wednesdays. The due date on all of the assignments will be the following Tuesday by 5pm. No late work will be accepted.

Grading: Grades for the class will be based on the weekly homework assignments. Here are no exams in the course, final or otherwise, but there is a midterm and final in-class project.

Course texts: All the course materials will either be online or handed-out in class. There is no textbook for the class.

Preliminary Class Schedule:

Week	Date	Topic
1	September 30, 2015	Basic **UNIX** commands & **AWK**
2	October 7, 2015	Introduction to **IDL**
4	October 14, 2015	Introduction to **Python**
4	October 21, 2015	More Python
5	October 28, 2015	Observing with Python
6	November 4, 2015	Advanced Plotting in Python
7	November 11, 2015	Holiday - No Class
8	November 18, 2015	Image Data in Python
9	November 25, 2015	Publishing Data- **LaTeX, BibTeX, and AASTeX**
10	December 2, 2015	Words as data - **Regular Expressions & sed**
11	December 9, 2015	Final Project

Some useful commands

```
cd                    Change Directory (go to HOME directory)
cd Astro300           go to Astro 300 directory from HOME directory

cp file1 file2        Copy - make a copy of file1 called file2
mv file1 file2        Rename (move) - file1 to file2
rm file1              Delete (remove) file1

ls                    List files in a directory

cat file1             Dump file to screen (stream file1)

Ctrl-c                Terminate program. Will cause most programs to
                      quit. Useful if something runs away on you

gedit &               Start the text editor in the background
```

Connecting to an `astrolab` machine from another location. Open a terminal and:
First you have to connect to the `gateway` computer:

```
% ssh -l username gateway.phys.washington.edu
```

Than connect to one of the astrolabs:

```
% ssh -l username astrolabXX.astro.washington.edu
```

The `-l` is a lower case L.
Replace the `XX` with a number from 01 to 24.

The Python computer language will be our primary tool in this class. Python is open-source project so you can freely install it on your own computer. I highly recommend the Anaconda Installer, a free product offered by ContinuumIO. It gives you a fast local Python installation with all of the up-to-date packages we will use in this class.

You can get the Anaconda Installer at:

https://store.continuum.io/cshop/anaconda/