

**SYLLABUS**  
**ASTR 3800 DATA ANALYSIS AND COMPUTING**  
**Fall 2018**

**TIME & PLACE:** Tuesday, Thursday 3:30-5:20 SBO

**INSTRUCTOR:** Webster Cash Duane D245 [webster.cash@colorado.edu](mailto:webster.cash@colorado.edu)

**TA:** Shalmali Barki -[shalmali.barki@colorado.edu](mailto:shalmali.barki@colorado.edu)

**HOURS:** Before and after class, or by appointment.

**WEBSITE:** The course is now run through Canvas.

<http://casa.colorado.edu/~wcash/APS3800/aps3800.htm>

**TEXTS:**

*Statistics and Analysis of Scientific Data*, Massimiliano Bonamente

*An Introduction to Error Analysis*, John Taylor

Optional:

*Python for Everyone*, Horstmann & Nicaise

*Statistics, Data Mining and Machine Learning in Astronomy*, Ivezić, Connolly, VanderPlas & Gray

*Data Reduction and Error Analysis for the Physical Sciences*, Bevington and Robinson

**Lecture and Notes:** This semester, I am going to try something new (for me). I am going to publish my lecture notes in advance of class. We will start each class away from the computers to think and talk about statistics, programming and presentation of results. Then, we will spend the second half of the class working in small groups at the terminals and laptops. During this time the TA and I will circulate, helping with debugging and other issues.

**EXAMS:** No Exams.

**HOMEWORK:** There will be homework assignments on a regular basis. They will be graded and will count toward your course grade. Doing these problems is the core of the course. By working through the problems you will become facile with applications programming.

**PROJECT:** The last Homework will be larger and attempt to bring together all the aspects of the course.

**COURSE GRADE:** Your grade will be based upon the homework grades and the project grade.

**PREPARATION:** Freshman level physics and integral calculus will prove very helpful but are not specifically required. It is expected that you have basic computer programming skills. It is advantageous to have Python experience, but not necessary. It is assumed that you have taken ASTR2600 or have equivalent skills.

**COMPUTING:** Access to the workstations and Unix-based computers of the Observatory is provided. However, most students prefer to install Python (for free) on their laptops and work there. Help will be provided to get that going during the first week of class if needed.