

Observational Astronomy (ASTR469), Spring 2019

Dr. Sarah Burke-Spolaor

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<https://sarahspolaor.faculty.wvu.edu/classes/astr469>

(for up-to-date course schedule, links, PDFs, materials, etc.)

Live course schedule: <https://tinyurl.com/astr469-S19>

Class lectures: White Hall G06 except when noted differently on schedule; MWF 1:30 – 2:20 pm

Office hours: Tuesday 10-11am, Wednesday after class until 3pm (otherwise by appointment).

Course goals: The goal of this course is to teach you many of the basic tools and skills used by professional observational astronomers: specifically, how data are collected and analyzed. There will be a relatively strong programming component to this course, because coding is a truly integral part of modern astronomical research. We will look at real data at various wavelengths. As an integral part of the class, we'll carry out observations with the Green Bank Telescope (GBT), operated out of Green Bank, WV. Schedule permitting, we will take a 1-day field trip to Green Bank (date TBD).

Textbook: "Observational Astronomy" by Birney, Gonzaez, & Oesper, ISBN 9780521853705.

You will need a textbook to adequately learn the material in this course. It does not necessarily have to be this book, but this is strongly suggested.

Homework: There will be 6-8 weekly homework assignments during the semester. **TURN ALL HOMEWORKS IN AS YOU ENTER THE CLASSROOM on the homework due date** (see schedule linked below). We will occasionally go over the solutions in class and therefore there will be a big penalty for homework not turned in at the start of lecture. If you can't get to class, email me clear, legible scans/photos of your homework before the start time of lecture that day. Homework turned in after the lecture will be marked down by 50%. I will not accept late homework more than one class day late (e.g. due Monday, turn in by Wednesday or 0%), except in extreme circumstances. Your lowest homework score will be dropped before final grading.

Homework #0: Your first homework assignment will be to **find my office and turn in a brief write-up before class on Friday, January 11**. If I'm not in my office when you find it, please slide the homework assignment under the door and email me to let me know you put it there (I will email you to confirm I received it). The brief write-up should include roughly 0.25-1 page of writing that includes:

- 0) Your name;
- 1) What astronomy background you have (what classes taken, any topics you're confident in?);
- 2) How much programming experience you have (Have you never written code? Have you written your own software suite? What language(s) have you used and how confident are you with them?);
- 3) What your goals and interests in taking this class are;
- 4) Anything I should know that would help me teach you better this semester. (Note: if you have a preferred pronoun please let me know it. Also, we use a lot of visual analysis in this course, so if you have any type of color blind it would be helpful for me to know this so I can show suitable graphs.)

To guide your thinking on this assignment: I ask for this largely so I can get to know you better, but also to ensure that I am aiming lectures at the right level. Include all components listed above and you will get an A on this assignment. Note: as you will learn through the programming component of this class, all good lists start from "0".

Projects: There will be a total of four projects during the second half of the semester (including one final project), consisting of guided data analysis and application of concepts from class. Each project is worth 10% of your final grade, and you will write up your analysis in LaTeX, in the style of an Astrophysical Journal paper (template will be provided). Project descriptions will be given in class. Projects will likely include GBT data taken (by you!) during a field trip to the telescope, and possibly data from the rooftop observatory if the CCD is repaired in time.

Exams: There is one in-class midterm covering observational astronomy basics. There is no final exam.

Attendance: I will not take attendance, but you are expected to attend. You are responsible for ensuring you get a copy of any hand-outs for classes missed (email me or ask other students).

Grading: The breakdown is: Homeworks (35% net, all homeworks equally weighted except for lowest one dropped), Projects 1, 2, and 3 (10% each), Midterm (15%), Final project (20%). Students will obtain A for $\geq 85\%$, B for $\geq 75\%$, C for $\geq 65\%$; D for $\geq 55\%$. Grades are not curved or rounded (i.e. a final grade of 84.95% is not $\geq 85\%$, thus cannot magically become an A). Come to office hours for extra help as early as possible in the semester if you start to worry about your grade. **The class weighting rewards weekly completion of the homework assignments. A low exam score is much less damaging than a low aggregate homework score.**

Inclusivity: By joining this class we all agree to fostering a positive environment based on open communication and mutual respect. If you wish to be addressed by a specific name or pronoun, particularly if different than the one on file at WVU, please indicate this to me by email. If you anticipate needing any type of accommodation in order to participate in this class, advise me and make appropriate arrangements with the Office of Accessibility Services.

Group work and Honor code: I want you to learn and understand the material. If you're struggling, arrange to meet with me for additional discussion (well before you feel completely overwhelmed)! Talking to your fellow classmates about the material and assignments is a great way to learn. **HOWEVER, the work you turn in must be your own.** As such, it's always a good idea to show your work and use explanations generated by you. Copying of another's work on homework, tests, or projects will not be tolerated and will result on a zero grade for the assignment.

Additionally, students found engaging in plagiarism, cheating, or forgery during any assignment or test will be subject to the conduct code policies of the University which can be found on-line at <http://www.arc.wvu.edu/rightsa.html>. You are encouraged to discuss assignments together, but each student must do his/her own work.

Should you have any questions about any activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.