Radio Astronomy (ASTR700), Spring 2020

https://sarahspolaor.faculty.wvu.edu/classes/astr700
(for schedule, links, course material)

Dr. Sarah Burke-Spolaor, sarah.spolaor@mail.wvu.edu
Office G68 White Hall (in annex, west side of building)

Class lectures: White Hall G06; T/Th 10:00 -11:15 am

Office hours: Tuesday 11:15am–Noon, Friday 11am–12pm (otherwise by appointment)

Course goals: We will study the fundamentals of modern radio astronomy: exploring how radio telescopes work, and applying electromagnetic theory to understand radio emission in the cosmos. This course will also develop your oral and written scientific presentation skills. Schedule permitting, we will take a 1-day field trip to Green Bank (date TBD in the first few weeks of class).

Textbook: The material we will learn comes from two prolific resources in radio astronomy. Our primary text is *Essential Radio Astronomy* (ERA; Condon & Ransom; https://science.nrao.edu/opportunities/courses/era). This is a set of expanded lecture notes freely available online. You can also purchase a copy of ERA. An additional excellent reference is *Tools of Radio Astronomy* (Wilson, Rholfs, & Hüttemeister, which is free on https://lib.wvu.edu/).

Homework: There will be five homework assignments, each counting 5% toward your final grade, consisting of 4-6 questions to help you practice and internalize the concepts from lecture. Some will involve light programming. **I will not accept late homework except in extreme circumstances.**

Projects: There will be three projects during the second half of the semester, 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 the style of an ApJ paper. Details will be given about each project in class. The final project will help you design and propose observations on the GBT.

Exam and Student-led Lectures: An in-class midterm will cover material from the first part of the course. In lieu of a final exam, each student will lead one up-to-30-minute lecture (half of a class period). Student-led lectures will be followed by comprehension quizzes for the class. More detail on this student-led lecture is in the rubric (which I will give you. It will also be on the course website).

Grading: The weighting breakdown is: Homework (25%), Projects (10% each), Midterm (20%), student-led lecture (20%), Student-lecture quizzes (5%, lowest dropped, rest averaged). Students will obtain A for at least 80%, B for at least 70%, C for a grade of at least 60%; D for a grade of at least 45%.

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 SBS. 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 this 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.