

ASTR469: Observational Astronomy - Spring 2023

Prof. Loren Anderson

Phone: 304-293-4884; 304-508-8486

Email: loren.anderson@mail.wvu.edu

Course Website: <https://lorenanderson.faculty.wvu.edu/astr469-observational-astronomy>

Meeting Times: 12:30 - 1:20 MWF, White G04

Office Hours: M 9:30-10:30, Th 12:00-1:00, or by appointment

Textbook: "Observational Astronomy" by Birney, Gonzalez, & 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 by far the most appropriate.

Course Description

The goal of this course is to give you the basic skills and knowledge necessary to be a professional astronomer, namely how astronomical observations are conducted and how the data are analyzed. Since all astronomical research today involved the use of coding at some level, there will be a relatively strong programming component to this course. Most of you will not be professional astronomers! Nevertheless, I will make sure the skills you learn will be general, and therefore transferable. Throughout the course, we will look at real data using various tools that astronomers use.

Prerequisite

Physics 314 (Intro modern physics) is a required pre-req that can be taken concurrently. There are no astronomy pre-reqs for this course. Basic knowledge of Astronomy would be very useful, but is not essential.

Grading

The course will be graded out of 400 points, with 25 points for each of the 6 homework assignments (37.5%), 50 points for the midterm (12.5%), 40 points each for projects 1-3 (10% each), and 80 points for the final project (20%).

Grades will be assigned based on the points earned:

350+ = A

300+ = B

250+ = C

200+ = D

200- = F

Homework We will have weekly homework assignments in the first half of the course, six total. All homework will be due at the beginning of class, one week after it has been assigned. We will be going over the solutions in class and therefore I cannot accept late homework assignments. I will drop the lowest homework score from your final grade.

You are encouraged to work together, but you cannot copy each other's work (see Academic Dishonesty Statement at the end of this syllabus). I cannot stress enough how serious the

consequences could be if you choose to copy a classmate's homework. Additionally, if you do choose to work in groups, make sure you completely understand the material, because you will be responsible for understanding it for the midterm, and of course for the final projects.

Midterm Exam Halfway through the course there will be an in-class midterm exam.

Projects There will be four projects, one for your final. These will take place after our spring recess.

Inclusivity Statement The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in your classes, please advise your instructors and make appropriate arrangements with the Office of Accessibility Services. (<https://accessibilityservices.wvu.edu/>)

More information is available at the Division of Diversity, Equity, and Inclusion (<https://diversity.wvu.edu/>) as well. [adopted 2-11-2013]

Academic Integrity Statement The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, instructors will enforce rigorous standards of academic integrity in all aspects and assignments of their courses. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the West Virginia University Academic Standards Policy. Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see your instructor before the assignment is due to discuss the matter.

Day	Date	Topics	Assignments
Mon.	Jan. 9	1 - Introduction	
Wed.	Jan. 11	2 - Light	
Fri.	Jan. 13	3 - Magnitudes	HW1 Assigned
Mon.	Jan. 16	MLK Day - No Class	
Wed.	Jan. 18	4 - Colors	
Fri.	Jan. 20		HW1 Due; HW2 Assigned
Mon.	Jan. 23	5 - Atmospheric Effects	
Wed.	Jan. 25	6 - Coordinates	
Fri.	Jan. 27		HW2 Due; HW3 Assigned
Mon.	Jan. 30	6 - Coordinates (in planetarium)	
Wed.	Feb. 1	7 - Time	
Fri.	Feb. 3		HW3 Due; HW4 Assigned
Mon.	Feb. 6	8 - Telescopes Basics	
Wed.	Feb. 8	9 - Photometry	
Fri.	Feb. 10		HW4 Due; HW5 Assigned
Mon.	Feb. 13	10 - Spectroscopy	
Wed.	Feb. 15	11 - Radio Astronomy	
Fri.	Feb. 17		HW5 Due; HW 6
Mon.	Feb. 20	12 - High Energy Astronomy	
Wed.	Feb. 22	13 - Statistics	
Fri.	Feb. 24		HW6 Due
Mon.	Feb. 27	Midterm Review	
Wed.	Mar. 1	Midterm	
Fri.	Mar. 3	Midterm Review	
Mon.	Mar. 6	Python	
Wed.	Mar. 8	Python	
Fri.	Mar. 10	Python	
MWF	Mar. 13-17	Spring Recess - No Class	
Mon.	Mar. 20	LaTeX	
Wed.	Mar. 22	LaTeX	
Fri.	Mar. 24	LaTeX	
Mon.	Mar. 27	Work on Project #1	
Wed.	Mar. 29	Work on Project #1	
Fri.	Mar. 31	Work on Project #1	
Mon.	Apr. 3	Work on Project #2	Project #1 Due
Wed.	Apr. 5	Work on Project #2	
Fri.	Apr. 7	Work on Project #2	
Mon.	Apr. 10	Spring Holiday - No Class	
Wed.	Apr. 12	Dr. Anderson out of town - No Class	
Fri.	Apr. 14	Work on Project #3	Project #2 Due
Mon.	Apr. 17	Work on Project #3	
Wed.	Apr. 19	Work on Project #3	
Fri.	Apr. 21	Work on Final Project	Project #3 Due
Mon.	Apr. 24	Work on Final Project	
Wed.	Apr. 26	Work on Final Project	
Fri.	Apr. 28	Work on Final Project	HW10 Due; Final Assigned
Wed.	May 3	2-4pm	Final Due