INQ 250AS: Astronomy Controversies

Fall 2018

Location: Hundley Hall 01 Elizabeth Campus **Time:** W 7:30-10:30

Instructor: Dr. Evan M. Aguirre **Email:** aguirre@roanoke.edu

Office Hours: TTh 1:30-2:30, MW 2:30-3:30, also by appointment **Office:** Trexler 266B

Overview

The astronomy laboratory class is our opportunity to supplement the things we talk about and look at on the projector with the "real thing." The astronomy lab is designed to develop our wonder of the night sky firsthand, as well as to understand how astronomers make observations and draw hypotheses about the nature of the universe. In general, labs are scorned by most students because they require the dreaded "write-up." Write-ups demand that we become adept at putting our thoughts on paper. This is scary for most of us because our thoughts are often a mess. The fact is that most of us will be paid a salary based upon our ability to write what we are thinking in a coherent and concise manner. Whether it is our boss or our colleagues, people want to know what we have completed and how did we go about accomplishing our tasks. For some of you, this is your first experience with required laboratory reports. Laboratory reports are designed to be concise summaries of the labs purpose, your measurements and results, and your personal observations. They are NOT designed to be a regurgitation of what you did during the lab (i.e., procedural). Wherever you are along the continuum of lab-writing, I think you will grow in your abilities this semester.

Policy

Since a portion of your grade in INQ 250 (15%) depends on the laboratory, you must enroll in both the lecture and laboratory sections of 250. The lab starting and ending times are firm, although it may be possible to complete the lab before the published ending time. Make-up labs will only be permitted as a result of a discussion with me beforehand or an emergency note (death, hospitalization, misdemeanor, etc.) signed by a governing official (medical doctor, parent, law enforcer, etc.). Since the lab-class operate as a single credit, the same policies apply to both activities.

Grading

So that you can understand the formal requirements of scientific writing, there is one observational lab that will require a formal lab write-up (see Formal Lab Write-up). The format and guidelines are given below but will be discussed in more detail before the report is due. In all other cases, a more concise weekly write-up will be due (see Weekly Lab Write-up). The data and observations for each lab will usually be completed during the lab period and the organization and summary

will follow after class. Besides the description below, a grading rubric for each type of lab will be provided to help guide you.

Formal Lab Write-Up

The formal written lab report will be completed in collaboration and submitted at the specific due date provided. Typed reports with neatly printed data tables and equations are acceptable for electronic submission. Please note that a deduction of 10 points will occur for every day a lab is late past the specified due date. A percentage breakdown of how the total grade is determined is as follows: "Cover Page" 5%, Abstract 15%, Data and Results 45%, and Discussion 35%. Each required section of the lab is briefly described below. We will discuss lab writing at our initial meeting.

The following items must be included on every "Cover Page": title of the experiment, course section, date, your name, and collaborators names. Though trivial to complete, this information accurately identifies your work so that you can receive a grade. The Cover Page must be a stand alone page.

The Abstract provides a brief summary of the entire report. This includes the purpose of the lab, a short statement of the physical phenomena investigated, the principal results, and a concluding sentence of whether or not the intended purpose was accomplished.

A neat and organized presentation of the Data and Results is important, which includes any graphs and calculations. Graphs must contain appropriate titles and labels, and equations need to be stated formally (generally) before any values are inserted. All values need units. The questions given under this section in the lab handout do NOT need answering explicitly. Rather, they are meant to guide you as the lab is completed.

Lastly, a concise Discussion (2 paragraphs) should conclude each lab. Here, the results should be stated and commented on as compared with the established values (if given). Also, an attempt to summarize the possible sources of error in your measurements and/or results should be included. In this section, you will answer any questions from the handout asked within the discussion section.

Weekly Write-Up

The weekly written lab reports will be completed individually and submitted the following WED after data completion. Neatly printed or typed reports are acceptable. Please note that a deduction of 10 points will occur for every day a lab is late past the specified due date. A percentage breakdown of how the total grade is determined is as follows: Cover Page 5%, Abstract 20%, Data and Results 50%, and Summary 25% (NOTE: NO Discussion). Each required section of the lab is briefly described below (or above). The Summary paragraph relates what was studied or observed to the course material. Three or four well-constructed sentences should highlight the purposes and/or happenings of the particular lab with content from the course. This should be the result of an individual reflection or understanding. We aspire to connect our classroom knowledge with our awareness of the night sky and its measurement.