

ASTRONOMY 221 OBSERVATIONAL ASTRONOMY SPRING 2007

INSTRUCTOR: Dr. Bruce J. Hrivnak OFFICE: NSC 140 PHONE: 464-5379 (office)
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OFFICE HOURS: W,F 1:30-3:00 and by appointment. (If those times don't work and you want to see me other times, stop by my office and see if I am available.)

CLASS TIMES: Monday 3:05-3:55 & 7:00-8:30 pm NSC 119 (and Observatory)

OBSERVATORY: OFFICE/DOME: 464-6849 INFO: 464-5202 after 5 pm

COURSE ASSISTANT: Mr. Wenxian Lu, NSC 145 464-6853

TEXT: *Observational Astronomy*, 2nd edition, D. Birney, Gonzalez, & Oesper, 2006, Cambridge.
Supplemental: *Handbook of CCD Astronomy*, 2nd edition, Howell, 2006, Cambridge Univ. Press.
plus supplemental handouts. (I will also list additional references for the various topics.)

GENERAL: This course is designed to give you an introduction to observational astronomy.

We will begin by learning how astronomers find objects in the sky. Then we will discuss the properties of telescopes, and you will learn how to use the VU telescope. We will then look at the main instruments that modern astronomers use to study celestial objects, a camera and a spectrograph, each coupled with a CCD detector. You will become familiar with each of these by using them in various exercises. This will give you each hands-on experience with the telescope and equipment. Since CCDs have become the dominant detector used in astronomy, we will study them in detail, and I have chosen a text for the course that deals with these.

Astronomy can be a very interesting subject, and I hope that you find that to be your experience in this course. Like other sciences, however, it requires precise measurements, careful recording, and careful analyses to derive the quantitative properties of celestial objects. In addition, it has the disadvantage of being weather dependent. Thus you must have a relatively flexible evening schedule and be prepared to observe when it is clear. You will be signing up on an observing schedule for observing dates and back-up dates to carry out your observing exercises. (These are the trials of observational astronomy, but I think that it is worth it to have the excitement and privilege of studying the cosmos!)

COURSE STRUCTURE: This course is effectively a lab course. The Monday afternoon class meetings are intended as times to introduce the different topics. The Monday evening class meetings are for hands-on demonstrations of how to use the equipment. You will then typically have two weeks to carry out the assigned Observing Exercises. Thus we will typically meet as a class only every other Monday evening; you will be expected to spend several hours one additional evening at the Observatory within that two-week period.

SARA TELESCOPE: VU has recently joined the SARA telescope consortium. Prof. Hillwig observed with the SARA telescope a few nights prior to Christmas, and we have a number of nights assigned for this semester. I plan to integrate into the course some observing with the SARA 36-in telescope on Kitt Peak, AZ. This will likely happen after Spring Break.

TEXT: The text we are using is one that I used for several years in the past before it became out of date. This is a new edition and I think that it includes most of the topics we will cover in the course. Prior to the recent printing of the new edition of *Observational Astronomy*, I had used *Handbook of CCD Astronomy* for the past few years. It is a good reference for CCDs and we will use it as a **supplemental reference**.

QUIZZES: We will have regular, short quizzes on the assigned reading.

MOVIES: I have several interesting movies about observational astronomy. I will look for a supplemental time to show these.

DETAILS:

- You will need a lab book into which you will record your observations and analyses. Please get a standard 5x5 Quad **Lab Book**. You can also use this for class and observatory notes.
- You will typically be doing your observing in pairs. I would like for you to switch partners for the different observing exercises.
- You will each be responsible for your own lab book and to do your own analyses and lab write-up.
- I expect that the course will involve about 4 hours per week, including class time and reading.

COURSE GRADE: Will be determined based upon the observing exercises, assignments, and general performance in the course.