

Syllabus – Astronomy 224 – Fall 2015

Instructor: Zachary Smith – zachary.smith@huskers.unl.edu

Tuesdays – 3:30pm – 6:20pm – JH 211

Course Description: *“Telescopic observations and laboratory experiments relating to observational astronomy. Obtaining digital astronomical images, the analysis of the resulting data and its astrophysical interpretation.”*

Astronomy 224 lab is meant to follow loosely with Astronomy 204 lecture. As such, you must have taken, or are taking, Astronomy 204 to be in the lab. This lab is an overview of quantitative astronomy. We will endeavor to cover the major topics in astronomy and astrophysics, though due to observational limitations, some major topics may be skipped or only briefly discussed.

Required Materials: There will be no textbook for this course. Each week a lab will be posted on the UNL Blackboard course page. You are **strongly** suggested to bring a notebook each class period to take notes on the lab reports you will turn in for grading.

Computer Requirements: This lab course will rely heavily on simulations, animations, and computer software. The class will meet in the Physics and Astronomy computer lab room, 211 JH. You will have a unique account that you can use to log into the computer. Each student is obligated to adhere to the UNL computer use policy in this room. This policy can be found at:

<http://www.unl.edu/ucomm/compuse/>

There should be no need to bring a laptop or tablet to the lab room. You will be required to do the vast majority of your work on the machines in the room.

General Requirements: There will be visits to local observatories and general use of telescopes, as part of this course. That will mean some ability to function in low-light and outdoor weather conditions. Please talk to the instructor and contact Services for Students with Disabilities (SSD) if you think you may not be able to perform these requirements. SSD’s contact information can be found at:

<http://www.unl.edu/ssd/home>

Laboratory Policies and Procedures: Below is a list of highlights regarding laboratory procedures. This list is not exhaustive and you should talk with the instructor if you have any doubt about laboratory protocol.

1. You are required to attend lab each week. There will be no excused absences, except for the MOST extreme of circumstances, i.e. severe illness or family emergency. In the event that you absolutely must miss a lab, you must contact the instructor immediately AND provide supporting documentation for your absence.
2. Any absence that is not excused, will result in a lowering of your overall lab grade.

3. Lab Reports will be posted on the course's Blackboard webpage each week before class time. You may print these from home, but you may also receive a hard copy when you arrive to lab. Some labs may be completed entirely online, but most will require some sort of sketch, or complex mathematical derivation, both of which are more easily done by hand.
4. You must submit your completed Lab Report to the instructor, before you leave the lab room each week. Occasionally you may be allowed to bring lab work home, but that will be at the instructor's discretion. Typically each lab will be able to be completed during class time.
5. You are encouraged to work on each lab with one other person (no group should contain more than 3 people) though each student must submit their own Lab Report for grading.
6. UNL encourages a collaborative learning environment. This skill is highly valued throughout academia and in industry positions. Working in teams is the norm throughout the nation. Since you are encouraged to work in teams, you must also "play nicely". You and your lab mate/s are expected to assist each other in your educational experience. Thoughtful questions and critiques are a requirement for this course. Any student NOT participating in the lab, may have their lab grade lowered at the discretion of the instructor. Similarly, all students are expected to maintain a positive educational environment as outlined in the Students Rights and Responsibilities section of the Undergraduate Bulletin:

<http://bulletin.unl.edu/undergraduate/>

7. Any student found committing acts of academic dishonesty will be dealt with according to the University procedures regarding such acts. Details can be found here:

<http://stuafs.unl.edu/ja/code/three.shtml>

If you have any doubts about what qualifies as academic dishonesty in this collaborative learning environment, you should consult the instructor.

Grading: Your lab grade will consist of two major components: your weekly lab grade average and a final project due at the end of the semester. Throughout the semester, you may estimate your grade in the course by simply finding the average of all lab scores to date. However, the final project will be heavily weighted and so the final letter grade will only be determined after all labs are graded and the final project is completed and graded. Your final lab grade will be weighted as such:

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| Weekly Lab Report Average: | 75% |
| Lab Practicum: | 12.5% |
| NASA Nebraska Grant Proposal: | 12.5% |

Final Lab Grade: 100%

Grades will vary over years, in a single course, depending on the students taking the course. Therefore, the instructor reserves the right to scale grades to fit the more general pattern for the course. A very rough way to estimate your final letter grade is detailed below.

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|----|--------|
| A+ | 100-98 |
| A | 97-94 |
| A- | 93-90 |
| B+ | 89-87 |
| B | 86-84 |
| B- | 83-80 |
| C+ | 79-77 |
| C | 76-73 |
| C- | 72-70 |
| D+ | 69-66 |
| D | 65-62 |
| D- | 61-59 |
| F | <59 |

Lab Practicum: Astronomy is a science very much dependent on field work. Because of this, you will be tested on your ability to make telescopic observations part way through the semester. More details about the practicum will be announced at a later date.

NASA Nebraska Grant Proposal: Every scientist in every aspect of science will be asked to prepare and present a grant proposal at some point in their career. Because of this reality, you will be asked to write and present a project summary at the end of the semester. In order to complete this presentation, you will be asked to spend a few lab periods, and possibly time outside of class, writing and preparing a project/presentation on an astronomy research topic of your choice. Your topic must represent the level of complexity required in the class throughout the semester. This topic must be approved by the lab instructor, but otherwise, it is fairly open ended. Your project may pertain to astronomy software, astrophotography, telescopic observations, etc. It is desirable for students to assist each other on their final projects, however each student must have and present on a unique topic.

Observations: Certain labs will require you to perform live telescopic observations. These observations will be performed at the UNL Student Observatory located on the Southwest corner of the Stadium Parking Garage, located across the street from Memorial Stadium. The phone number for the Observatory is 402-472-4728. If you have any difficulty seeing in low light levels, work in outdoor conditions, need wheel-chair access, or are not able to stay later than the end of class time, please inform the instructor of these limitations by the second class period.

Sample Semester Schedule (topics to be updated each week in Blackboard):

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| August 25 th | Syllabus and procedural review – Lab 01 |
| September 1 st | Lab 02 |
| September 8 th | Lab 03 |
| September 15 th | Lab 04 |
| September 22 nd | Lab 05 |
| September 29 th | Lab 06 |
| October 6 th | Lab 07 |
| October 13 th | Lab Practicum |
| October 20 th | No Lab – Fall Break |
| October 27 th | Lab 09 |
| November 3 rd | Lab 10 |
| November 10 th | Lab 11 |
| November 17 th | Lab 12 |
| November 24 th | Behlen Observatory – We will be returning to UNL later than 6:30PM |
| December 1 st | Prepare Proposal |
| December 8 th | Submit and Present Proposal |