

ASTR103 – Descriptive Astronomy

Class Syllabus

INTRODUCTION

This is a descriptive course about astronomy. Topics include a brief history of astronomy, astronomical coordinates and conventions, stars and stellar evolution, galaxies, cosmology, and our solar system. While a largely non-mathematical course in that very few calculations are required, a large amount of mathematical reasoning is used. Science is "evidence-based," and at all stages of the course we will focus on the observations upon which astronomers base their theories (in addition to understanding that when scientists say "theory" they mean something different than the common usage).

Much of the content of the course is online and access to an active internet connection will be required.

COURSE OBJECTIVES

The objectives of this course are to provide you, the student, with an understanding of the following elements of astronomy:

- Gain a brief historical perspective of the science
 - Understand the nomenclature, coordinates, and tools of Astronomy
 - Understand stars and their life cycle
 - Understand the different kinds of observed galaxies
 - Understand some of the scale, scope, history, and future of the universe
- Describe the solar system – the sun, planets, and be able to compare and contrast planet properties and histories

GENERAL POLICIES

Style of Instruction: This course is based on a "flipped" classroom model. While there will be some lecturing, research shows just listening to a lecture is a poor way to gain deep understanding and retention of scientific concepts. Instead, you must engage with the material through "hands-on" practice of the content, and that learning from and explaining your understanding to your peers is extremely valuable. Your instructor has the responsibility of putting things in context and guiding you through the learning process, but the ultimate responsibility for learning the content falls on the student. Thus this course is structured as follows.

- (1) Engage with the preclass online lectures by finding the links for the appropriate module under the Class Schedule and Pre-class lecture links menu. For example, to view lecture 1.2, look under the heading **Module 1.2: Ancient Astronomy** and click on the link [Online Lecture 1.2](#).
- (2) Take a short quiz ("Preflight Assignment" form the menu at left); take these quizzes up to three times each.
- (3) Read supplementary material as necessary (e.g., if you buy an optional textbook or find additional online resources).
- (4) Attend class where your instructor and your peers will help to clarify, correct, and fortify your understanding of the concepts.
- (5) Complete NAAP labs (homework assignments that involve a computer-based "virtual lab" component), practice problems in your workbook and course pack, attends observing sessions and do observing projects, etc. for you to further test your understanding of the concepts and gain confidence.
- (6) Repeat any of the above steps as necessary.

Time Commitment: Expect to spend 5 to 9 hours per week outside of class on the activities described above. You are responsible for following the calendar and deadlines by viewing all required online materials assigned before class and completing all assignments, such as Preflights, NAAP labs, Projects, and Tests, on time. Sufficient time is allocated for all assignments, and therefore no late work will be accepted.

Attendance and Participation: In order to satisfy the structure for this course, you are expected to attend every class to engage in the material. Attendance will be indirectly tracked through clicker questions, and this participation will be a graded component of the course. Again, you are responsible for completing all assignments on time. Extensions and make-ups will not be granted. You do NOT need to inform us of occasional absences, but are fully responsible for completing any work assigned for or during the missed classes. If you have, or anticipate having, an extended absence for a documentable, unavoidable, reasons (e.g., family emergency or illness), you may request special accommodations as noted below.

Assignment Deadline Policies: No late work will be accepted. Exceptions may be made at the instructor's discretion for a documentable, unavoidable, reasons (e.g., family emergency or illness), provided you request this from your section instructor in writing as soon as possible, but no later than 48 hours after returning to classes.

Instructor and TA Availability: I will be available in my office (Jorgensen Hall 310F) at the office hours listed in this syllabus, and also by appointment. I am also largely available by e-mail during regular business hours. I may also answer some e-mails outside of regular business hours but I cannot guarantee that I will be able to do this at any given time. Meeting with your TA outside of class time is at their discretion. There is also a Resource Center in Room 253 of Jorgensen Hall that is available for some walk-in help with the concepts of the course. If you need to turn in assignments outside of class time, please turn them into my mailbox in the UNL Physics Office in Jorgensen 208.

Technology Policies:

- (1) You are required to have an iClicker for the class. Use of the iClicker will factor into your participation points.
- (2) You will need internet access to view the online lectures, PreFlight quizzes, NAAP labs, etc.
- (3) The UNL Blackboard system provides me with your e-mail and announcements posted in Blackboard are sent to this e-mail; you should check either Blackboard or your e-mail regularly (perhaps once a day) for any course announcements.
- (4) Cell phone use is strictly prohibited in the classroom.
- (5) **Laptop and tablet use is not permitted without special permission of the instructor.** If you do gain permission to use a tablet or laptop, you will be required to sit in the back of the classroom as not to distract other students around you.
- (6) Violation of (4) or (5) may result in a request to leave for the day.

Class Conduct Policies:

In addition to policies outlined in this syllabus, you are expected to abide by all general University of Nebraska–Lincoln policies. These include the Student Code of Conduct (with regard to plagiarism and cheating) and anti-discrimination policies. Some aspects of expected behavior during class time were covered above, but I will reiterate that I expect you to come to class prepared to learn, and that you foster a positive learning environment for yourself and your fellow students. Please participate enthusiastically in during the group activities, and please remain silent during times of lecture and other times where I request it. Please be respectful of everyone in both your language and actions. That respect includes both personal respect and creating the proper classroom environment. If you need to visit the restroom, you do not need to seek permission, just leave quietly and return quietly as soon as you can.

Disability Accommodation:

Disabilities which require accommodation must be documented with the Services for Students with Disabilities (SSD) Office in the Canfield Administration Building (Room 132; phone 472-3787, voice or TTY) and brought to the attention of the instructor in a timely manner and in accordance with University policy. It is best to consult with the instructor during the first week of classes at the latest. If these requirements are met in a timely manner, all reasonable accommodations will be made to assist you in getting the most out of this course.

Instructor Discretion Policy:

Any exceptions to course policies will be made at the instructor's discretion without waiving the right to enforce those policies at a later date. For example, if I allow a late assignment for some reason, I am not obligating myself to make the same exception to a different student or at a later point in the course. I pledge to make all exceptions as fairly as possible, but they are still at my discretion.

ASSESSMENT (GRADES)

Enabled:
Statistics Tracking

| Item | Fraction of Grade |
|----------------------|--------------------------|
| 6 exams | 48% |
| 38 PreFlight Quizzes | 16% |
| 6 NAAP Labs | 16% |
| Participation | 12% |
| 3 Projects | 8% |
| Total | 100% |
| | |
| Grade | Points Earned |
| Some type of A | > 85% |
| Some type of B | > 75% |
| Some type of C | > 65% |
| Some type of D | > 55% |

Note: The final letter grade distribution, including +'s and -'s will be determined by a final distribution of the students' grades, i.e., the instructor reserves the right to curve up or down. However, it is reasonable to expect that it will be very similar to the values listed above.

Exams: The course is organized into six segments. Each segment will be concluded by an exam, which will be administered in the [UNL Testing Center](#) according to the policies and hours of operation specified on the Testing Center web site. Questions on the exams will be similar to those that appear in the worksheets, lecture tutorials, NAAP labs, and PreFlight quizzes. The 6 exams will be equally weighted and worth a total of 48% of the final grade. Each test may be taken in a several-day long window, as specified in the Course Schedule. It is strongly recommended that you do not make significant travel plans (i.e., leaving early at the end of the semester) before the test windows are announced. *Do not wait until that last moment to take your exam.* Hundreds of students use the [UNL Testing Center](#) every day, but there is limited seating available. The Center is usually very busy during the hour before closing each day. Because of the several-day testing windows, no extensions will be granted. Plan ahead!

Preflight Quizzes: The preflight quizzes provide a measure preparation for class. Each quiz can be taken up to three times with only the highest score counting. If you experience technical issues with a PreFlight it is recommended that you DO NOT continue to make attempts unless you are trying a different computer. PreFlight quizzes must be completed by 10 AM **before** the class that they correspond to. These quizzes will be worth 16% of your course grade.

Participation: Participation will be tracked through the use of the iClicker student personal response system AND via workbook assessment during class. Clicker questions will be asked during every class period. You do not need to get the right answers for credit; any choice will "count." Your participation score grade will be based on your voting percentage out of 75% of the questions asked. For example, if 100 questions are asked over the course of the semester (which is probably low, considering there will be several questions asked per class period), then your grade will be the number of questions you answered divided by 75, with no extra credit. So answering 75, 88, or 100 questions would get you 100% participation credit; answering only 60 questions

would give you an 80%. Workbook assessment will be determined by your group's activity on given assignments in class. A TA will randomly check on your group, and make sure you are completing the assignment. Like the clicker scores, you do not need the correct answers; rather only participation. Each workbook participation score will be equal to 5 clicker questions. Clicker questions and workbook assessment will not be tracked until the 3rd week of class. You must register your clicker using the Clicker Registration menu item at left. Participation points are worth 12% of your grade.

NAAP Labs: You must complete six [Nebraska Astronomy Applet Project \(NAAP\)](#) lab assignments. These are essentially homework assignments. They are also, in some sense, virtual laboratories which will have student guides (that is, the list of questions and tables to be filled in) to be turned in. There are six "units" in the course, and there is one NAAP Lab associated with each unit. The NAAP Lab Student Guides must be submitted in hard copy form in class the last day of the end of its corresponding unit. (See the Course Schedule for assignments and due dates). The six NAAP Labs will be worth, in total, 16% of your grade.

Projects: You will have to complete a total of three short "projects" related to observing at the student observatory on campus, attending a planetarium show, attending a talk by a special guest speaker, or possibly some other events TBD. These "projects" basically involve attending the event, performing the activity (if applicable), and then a short write-up. You must complete one observing project. See the "Projects" page in Blackboard for additional details. The projects are worth 8% of your grade.

Final Exam: There is no separate final exam. Exam 6 will be due around Finals week, as specified in the Course Schedule. There may be an *ungraded* and *optional* comprehensive quiz used for assessment purposes. Extra credit points will be given upon its completion. The exact date of this end-of-semester assessment quiz is TBD.