

☆ ★ ☆ **AST 307 - FALL 2015** ≡✳≡

INTRODUCTORY ASTRONOMY
SECTION 46715 (TuTh 12:30 PM)

WEBSITE: <http://www.as.utexas.edu/astronomy/education/fall15/dinerstein/307.html>

In addition to this syllabus, read the “Memo to Undergraduate Astronomy Students Regarding Astronomy Courses,” item 1 at the top of the Astronomy Courses home page.

Meetings: TuTh 12:30-2 PM RLM 5.104* - This floor cannot be reached by the elevators; take the stairs or escalator from the 4th= ground floor.

Instructor: Prof. Harriet Dinerstein Office: RLM 16.324

Contact Info: harriet@astro.as.utexas.edu Phone: 512-471-3449

Office Hours: Mon. 1 – 2 PM, Wed. 2 – 3 PM, or by appointment

T.A.: Jacob Hummel Office: RLM 16.307

Contact Info: jhummel@astro.as.utexas.edu Phone: 512-471-7460

Office Hours: Tues. 2 – 3 PM, Thurs. 2 – 3 PM

Help Sessions: Wed. 7:30 – 8:30 PM, in RLM 15.216B

COURSE DESCRIPTION: Ast 307, Introductory Astronomy, provides an overview of our modern understanding of the Universe in which we live, as well as the methods we use to learn about the planets, stars, & galaxies that inhabit it. You will be introduced to new concepts and ways of thinking about and interpreting natural phenomena. One of the most effective means of mastering this material is by conducting *your own* logical reasoning and simple calculations, based on physical principles and formulas presented in class and in the textbook. If you feel uncomfortable with this approach, you should consider taking the alternate course Ast 301, “Introduction to Astronomy,” which is designed for non-science majors. However, Ast 301 may not be counted towards a degree in the College of Natural Sciences. Only one of the two – Ast 301 or Ast 307 – can earn credit, since they are essentially two versions of the same course.

Course Flag and Prerequisite: Since Ast 307 fulfills the **Quantitative Reasoning flag**, more than half the course grade must be based on the use of quantitative skills to address, analyze, and answer real world questions. You will be applying these skills to such topics as: how big and massive is a newly discovered extrasolar planet? How old are the stars – and how do we know this? How far away are the most distant galaxies we’ve seen and at what stage of their lives are we seeing them?

The official prerequisite for Ast 307 is Math 305G or the equivalent. We will probably not use the most advanced topics in that course; however, we *will* be using square roots, exponents, logarithms, simple trigonometry, and mathematical operations on numbers expressed in scientific notation. We will be happy to refresh your memory on this math, but ultimately you will need to be able to make calculations on your own. You will need to have a calculator that handles scientific notations and most functions.

TEXTBOOK: We are using the 7th edition (7/e) of Bennett's "The Cosmic Perspective," the full-length version of a widely used textbook. Options on how to acquire it are discussed below and were previously posted on the class website. Be sure to get the correct version. **Don't** buy a book entitled "The Essential Cosmic Perspective" or "Cosmic Perspective Fundamentals," and **don't** buy subtitled versions such as "The Cosmic Perspective: The Solar System" or "Star, Galaxies, and Cosmology." These do not include enough of the content of our course. You may use the 6th edition as long as you get the full-length book, but should realize that the numbers of recommended self-study questions at the ends of chapters may not always match those in the 7th edition.

TEXTBOOK OPTIONS: We ordered the textbook through the University Co-op, in what is called "*a la carte*" form (unbound, pre-punched pages). This is more flexible to use, especially to carry around, but more importantly it saves significantly on the price. We also ordered used copies of the bound version. These options range between \$85 and \$115 in price. You can go to Amazon for lower prices, but many of those copies are described as being marked up with highlighter or underlining, or having water damage. You might also consider getting an eTextbook from the publisher or from CourseSmart. <http://www.pearsonhighered.com/educator/course/Astronomy/91049342.page>, click on "Cosmic Perspective Plus MasteringAstronomy with eText" (the 6th item listed). It is listed as being "temporarily unavailable." Now click on the "Pearson Choices" tab. This will take you to a list of additional choices. These include the electronic book alone for \$80 and the CourseSmart eText for \$73. Pearson also offers options that include access to MasteringAstronomy, an online homework system (we are not using this, so no need to give the course ID number) that also has extensive self-study tools such as tutorials and quizzes. These are not required, but may be helpful if you like such online study aids.

COURSEWORK AND GRADING: My philosophy is that grades should be based on personal achievement, not forced onto a "curve" that restricts the numbers of students who receive a given grade. *There will be no quotas* on A's and B's! I also believe the course grade should reflect sustained effort and achievement throughout the semester, including frequently assigned homework and participation credits earned either in class or through approved external activities. Regular attendance and paying attention in class is required. It will be difficult to pass the class – let alone earn a good grade – if you attend only occasionally. This is **by design** (it's a feature, not a bug). I will track attendance and participation, and submit failing/absence reports for students with excessive absences. If you plan to skip many classes, you should not take this course.

GRADING BASIS AND ACCESSING YOUR GRADES: We will use the plus/minus letter grade system. A table of numerical score-to-letter-grade correspondences will be posted after the first exam. This table usually applies for the whole semester; at least, it will not get harder to earn a given letter grade. Most homework assignments will be graded within one week, and available for pickup in class or at help sessions. Grade records will be available via Canvas. However, most of the class materials will be posted on the Astronomy website with access through a username and password. The latter will be given in class or in person, but will not be emailed or posted.

Hour Exams: 64%. There will be three in-class “midterm”-style exams of equal weight. The format will include multiple-choice questions, short-answer essays, and numerical problems similar to those worked in class activities and on the homework. You are required to ***bring a scientific calculator*** (not a smartphone, tablet, or laptop) to the exams. However, there will be no need to memorize equations or constants; you will be given a list of these at each exam. The tentative exam dates are: **Oct. 1, Oct. 27, Dec. 3.**

Missed Exams: It is not feasible for us to provide make-up exams for all students who have legitimate reasons for missing an exam. Instead, we provide an all-purpose make-up exam during the official Final Exam time slot. This exam can replace any (one) earlier missed exam. It will be comprehensive (cover the whole semester). Furthermore, any student in the class may take the final even if they did not miss an earlier exam, as a chance to improve the overall course grade. It will count only if you do better on it than on the earlier exams. In other words, the best 3 out of 4 exam scores will determine your grade, if you take the three hour exams plus the final. Apart from this opportunity there will be no other make-up exams (absolutely NO exceptions granted), and the make-up final must be taken at the official time, which is **Wed., Dec. 9, 7 – 10 PM** (room to be determined). If there is any conceivable chance that you may need or want to take this exam, you should plan accordingly.

Homework: 20%. There will be 6 (or possibly 7) graded problem sets during the semester. The lowest score will be dropped. There are several opportunities each week to obtain help from the T.A. and instructor, through office hours and a help session. While you may discuss how to approach problems with classmates, *the work you ultimately turn in must be your own.* Duplicated work will get no credit.

HW Format and Lateness Policies: In general, ***all assignments must be turned in as hard copy*** (on paper), *not* emailed. Emailed work will not be accepted for credit. Homework assignments are to be turned in **at the beginning of class on the due date** (usually but possibly not always a Thursday). They may be turned in to the T.A. or in the Astronomy Student Office (15.204) up until to 2:00 PM on the next day (i.e. Friday, for a Thursday due date, or Wednesday for a Tuesday one), for reduced credit (20% of full credit will be deducted from your actual score). After this point no credit will be given. Although one homework score will be dropped, don’t “spend” this exception frivolously; you might need to use it later in the semester.

Participation Activities: 16%. The remaining 16% of your grade will come from various activities, mostly carried out in class and turned in on worksheets or index cards. These may include surveys, multiple-choice or narrative responses to thought questions, and short essays or problems. Most will be worked in small groups. In addition, some participation credit may be earned through approved out-of-class activities, but the amount of credit that may come from outside activities is limited. Participation credit is cumulative and there will be more than enough opportunities to earn 16 points; however, total participation credit is capped at 16 points. This portion of your grade is entirely within your power to guarantee, and can make a major difference in your course grade.

Classroom Behavior: I expect everyone to be respectful of the instructor and their classmates. Talking to your neighbor or on a cell phone is highly distracting to others. **Turn off the volume on your cell phone before the beginning of class, and do not use them for texting or internet access during class.** The first time it happens I will simply glare at you; if it happens again, this will adversely affect your grade. I also strongly discourage use of tablets or laptops in class. There is documented evidence that not only do students who use the internet for unrelated purposes during class lower their own grade, they also *lower the grades of students around them*. If such activity becomes too distracting or disruptive, I reserve the right to ban their use entirely.

Scholastic Integrity/Academic Dishonesty: The University of Texas at Austin holds its students and community to high standards of academic integrity. Details can be found at http://deanofstudents.utexas.edu/sjs/acint_student.php. We take these rules seriously. *We will not tolerate copying or cheating on exams, homework, or other classwork.* If we find duplicated work or other evidence of cheating, neither student will receive credit. We may also impose more severe academic penalties, depending on circumstances, not excluding an F for the course and a report to the Dean of Students.

FOR STUDENTS WITH DISABILITIES: Instructors at the University of Texas at Austin provide certain academic adjustments for students with disabilities who are certified by the office of Services for Students with Disabilities (SSD). Contact them at 512-471-6259 or ssd@uts.cc.utexas.edu. If you anticipate needing accommodations, please bring the forms to us *as soon as possible* so that we can make the necessary arrangements. Specifically, students who need extra time and special environments for exams must arrange to be proctored by SSD staff, and this is only possible with (far) advance notice.

EVENTS OUTSIDE OF CLASS: The Astronomy Department offers evening Star Parties on campus on most Wednesdays, Fridays, and Saturdays; details will be announced and posted at <http://outreach.as.utexas.edu/public/viewing.html>. You may earn up to 3 participation credits by *documented* attendance at our star parties, 1 point each. (By documented, we mean that you must obtain a signed slip from the person in charge of the star party.) **Warning to the naïve:** Star parties are held only when the weather permits. Don't assume that you can wait until the end of the semester. If it's cloudy then, you will be out of luck! There might also be an opportunity to attend a Public Talk for credit, which will require that you turn in a written (hard copy) summary in compliance with instructions to be announced. If any such opportunities arise (they are not arranged by the instructor), they will be announced in class and on the website.

WE WANT YOU TO SUCCEED IN THIS COURSE! Our goal is for you to excel in, and we hope enjoy, this course. To make that happen, we encourage you to ask questions, in and outside of class. Don't feel embarrassed to ask questions that you think might seem "dumb"; it's much better to get something straight at first than to wait until you are really confused later on. Also, other students probably have the same question, but are too shy to ask. Please also ask us questions during office hours, help sessions, and by email; we are here to help you understand and learn.

IMPORTANT DATES FOR FALL 2015 CLASSES:

First meeting of Ast 307: Thurs., Aug. 27

Last day of free add/drop period: Mon., Aug. 31

Last day to add a class through the Astronomy Student Office (you must have the instructor's permission), or to drop a class with a possible refund: Fri., Sep. 11

Last day to drop a class except for urgent *non-academic* reasons; also the last day to change between letter-grade and pass/fail grading basis: Tues., Nov. 3

Thanksgiving Break: no classes Thurs., Nov. 26 – Fri., Nov. 27

Last class meeting, also Exam 3: Thurs., Dec. 3

Optional (or Make-up) Final Exam: Wed., Dec. 9, 7 – 10 PM

PRELIMINARY* SCHEDULE (a more detailed schedule will be posted):

Dates	Topics	Reading (some partial chs.)
9/1 – 9/8	Big Picture; Sky Phenomena	ch. 1, 2, S1
9/10 – 9/17	Planetary Orbits, Gravity	ch. 3, 4
9/22 – 9/29	Light; Tools of the Astronomer	ch. 5, 6
10/1	Exam 1 on ch. 1 – 4 & S1	
10/6 – 10/20 ⁺	Planets Near and Far	ch. 7, 8, 10, (11), 12, 13
10/22	The Sun	ch. 14
10/27	Exam 2 on ch. 5 – 13	
10/29 – 11/10	Stars: Properties, Lives, & Deaths	ch. 15, 17, 18
11/12 – 11/17	The Milky Way and Galaxies	ch. 19, 20, (21)
11/19 – 12/1	Cosmology	ch. 22, 23
12/3	Exam 3 on ch. 14 – 23	

*** Subject to revision**

⁺ Guest lecture by Prof. John Lacy on Oct. 20

() = to be covered only if time permits