

☆ ★ ☆ **AST 307 - SPRING 2015** ☆ ★ ☆
INTRODUCTORY ASTRONOMY
UNIQUE No. 47350

WEBSITE: Astronomy Home Page → Courses → AST 307
<http://www.as.utexas.edu/astronomy/education/spring15/dinerstein/307.html>

Also 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 is not reachable by elevator; 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 512-471-3449

Office Hours: MW 1:30–2:30 PM or by appointment

T.A.: Kevin Jumper Office: RLM 17.312

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Office Hours: W 10:30-11:30 AM or by appointment

Help Sessions: TBA, probably Wed. 4 – 5 PM in RLM 13.132

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 new concepts and ways of thinking about and interpreting natural phenomena. One of the most effective means for achieving such mastery is by carrying out your own logical reasoning and simple calculations (at the level of high-school algebra and geometry), based on physical principles 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 for credit towards a degree in the College of Natural Sciences. Additionally, only one of the two courses – Ast 301 or 307 – may be taken for credit, since they are essentially different versions of the same course.

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. How is what we see from astronomical objects affected by our viewpoint (literally your point of view: from where and when you are looking)? How old is the Earth, Sun, Galaxy, & Universe? What can we tell about the far past and distant future? How is our present knowledge limited by our current abilities and technology for observing distant objects? Which theories and ideas are and are not plausible?

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. Be sure to get the correct version. **Don't** buy "The Essential Cosmic Perspective" or "Cosmic Perspective Fundamentals," and **don't** buy subtitled versions, e.g., "The Cosmic Perspective: The Solar System" or "Stars, Galaxies, and Cosmology." These do not sufficiently match the content of our course. However, you can use the 6th edition (6/e), as long as you get the full textbook (check the exact title) as opposed to one of the shortened versions; in that case, some numbers of recommended (self-study) questions at the ends of the chapters may not match the announced numbers.

TEXTBOOK OPTIONS: The Co-op may have up to three different formats of the book: First, new copies of the unbound (a la carte, or loose leaf) 7th ed., chosen to knock \$50 off the price of a new bound book, but still a bit over \$100. They will also have some used copies, probably mostly bound and at a similar price of slightly over \$100.

Some students find it easier to learn new material with the aid of on-line tools such as interactive tutorials and practice quizzes. The textbook publisher (Pearson Higher Ed.) has a particularly nice package of these, called MasteringAstronomy. It is possible to buy access to these learning tools with just an ebook version of the text, but this costs as much as the options described above. When bundled with a paper copy, the ebook + tools adds less than \$10 to the price, a real bargain. The Co-op should have a few examples of this package, described here: [paper text plus ebook and online access](#).

There are other options that may lower the price further at the sacrifice of some features. You can buy the CourseSmart ebook rather than the Pearson ebook; see [CourseSmart ebook](#). A 180-day rental costs about \$73. Or you can take your chances with sellers of used books who work through Amazon or similar companies, and get a copy with a price dependent on the condition of the book.

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 over the semester. Therefore, ongoing activities and assignments are strongly weighted in the final grade. It will be difficult to pass the class – let alone earn a high grade – if you attend only occasionally, or show up only for exams. 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. Therefore, 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 score-to-letter-grade correspondences will be posted after the first exam. This usually sets the grading scheme for the semester; at least, it will not get harder to earn a given grade. Assignments will usually be graded within a week. Grade records will be available via **Canvas**, although most class materials will be posted on the Astronomy website, with restricted access through a username and password. The latter will be announced in class, but **not** e-mailed 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 on the homework. You must bring a scientific calculator; you will not be allowed to use computers, tablets, phones, or other Internet-connected devices in place of a calculator. However, there will no need to memorize details of equations or values of physical constants. You will be given a list of these at each exam. The first midterm will be on **Feb. 19**, and the third (last) will be on **May 7**. The date of Exam 2 is not yet determined, but will be within the range March 27 to April 9.

Making up a Missed Exam: There are many legitimate reasons for a student to occasionally miss an exam. However, it is not feasible to write individual make-up exams for each such case. The need for make-up exams will be covered by an all-purpose make-up exam during the official Final Exam period. It will be comprehensive, enabling it to serve as the make-up for any of the other exams. This optional Final Exam can replace any **one** earlier missed exam. Furthermore, *any* student in the class, even if they took all three in-class exams, may take the Final Exam as a chance to improve the course grade. It will count *only* if you do better than on the earlier exams. In other words, the best 3 out of 4 exam scores count towards the course grade. Apart from this opportunity, there will be no other make-up exams (NO exceptions), and the make-up must be taken at the official time: **Mon., May 18, 9 AM – noon**. If there is any chance that you may want to take this exam, be sure to make travel plans that enable you to do so.

Homework: 20%. There will be 6 or 7 graded problem sets during the semester. The lowest score (or possibly the lowest two) will be dropped. You will usually have a week to complete each, with several opportunities to obtain help from the T.A. or instructor. While you may discuss how to approach the homework 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. E-mailed work will not be accepted for credit. Homework assignments are to be turned in **at the beginning of class on the due date** (usually a Thursday). They may be turned in to the T.A. or in the Astronomy Student Office up to 2:00 PM on the next day (usually Friday), for slightly reduced credit (20% off). After 24 hours, no homework will be accepted for credit. Although at least one homework will be dropped from the HW total, don't spend this exception frivolously; you might need it later in the semester.

Participation Activities: 16%. The remaining 16% of your grade is from various activities, mostly in class. In class activities may include surveys, group responses to thought questions, and short problems. Out-of-class activities are discussed below. Participation credit is *cumulative* and there will be considerably more than 16 points worth of opportunities to earn it; however, no one will receive more than 16 points for participation. This portion of your grade is entirely within your power to guarantee!

Classroom Behavior: We expect everyone to be respectful of the instructor *and* classmates. **Turn off the volume on your cell phone before the class begins, and do not use them for texting or internet access during class.** The first time your phone rings I will just glare at you; if this recurs, it may adversely affect your grade. Using tablets or laptops for note-taking is strongly discouraged due to its adverse effects on those near you, and I reserve the right to disallow their use entirely if it becomes too distracting. On the other hand, **do** bring a calculator to class regularly.

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; also see links to “Standards of Conduct” and “The Discipline Process.” We take these rules seriously. *We will not tolerate copying or cheating on exams, homework, or other class work.* 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 the circumstances, not excluding an F for the course, or 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 *as soon as possible* in order to make necessary arrangements.

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 three participation credits by *documented* attendance at our star parties). (The required documentation is a signed slip from the person in charge of the star party.) **Warning to the naïve:** Star parties are held only when weather permits. They are cancelled when it’s cloudy (or worse). So don’t assume that you can wait until the end of the semester; if you hit bad weather (and one often does, in the late spring), you’ll be out of luck! There may be other opportunities for outside credit, such as Public Talks; there will be at least one such talk, in late February. To earn credit for attending such a talk you will need to turn a written (hard-copy only) summary, by a date to be announced.

WE WANT YOU TO SUCCEED IN THIS COURSE! Our goal is for you to excel in, and we hope, enjoy, this course. I encourage you to ask questions, in and outside of class. If I don’t see your raised hand, call it to my attention; sometimes I miss seeing it from the front of the classroom, especially when the lights are lowered for slides. 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. Chances are excellent that some of your classmates have the very same question! Please also take advantage of the opportunities to ask questions during office hours, help sessions, and by email; we are here to help you understand and learn!

IMPORTANT DATES FOR SPRING 2015 CLASSES:

First meeting of Ast 307: Tues., Jan. 20

Last day of free add/drop period: Fri., Jan. 23

Last day to drop a class with a possible refund: Wed., Feb. 4

Spring Break: Mon., Mar. 16 – Fri., Mar. 20

Last day to drop a class except for documented *non-academic* reasons; also the last day to change between letter-grade and pass/fail grading: Mon., Apr. 6

Last class meeting, also Exam 3: Thurs., May 7

Final Exam for 12:30 PM section: Mon., May 18, 9 AM – noon

APPROXIMATE* SCHEDULE (an updated schedule will be on the website):

Dates	Topics	Reading
1/20 – 27	The Big Picture; Cycles of the Sky	ch. 1, 2, S1
1/29 – 2/5	History of Astronomy, Gravity	ch. 3, 4
2/10 – 2/17	Light; Tools of the Astronomer	ch. 5, 6
2/19	Exam 1, covering chs. 1 – (4 or 5)	
2/24 – 3/12	Planetary Systems: ours & others	ch. 7, 8, 10, 12, 13
3/12 or 24	Our Sun	ch. 14
3/17 – 19	SPRING BREAK	
3/24 – 4/2	Properties of Stars	ch. 15
date TBA	Exam 2, covering ch. (5 or 6) – 15	
4/7 – 4/16	Stellar Aging and Death	ch. 17, 18
4/21 – 4/28	Galaxies: the Milky Way & others	ch. 19, 20, 21
4/28 – 5/5	Cosmology	ch. 22, 23
5/7	Exam 3, covering chs. 17 – 23	
5/18	Optional Final Exam**, covering the entire semester	

* **Subject to revision**

** **The final exam is *required* if you missed any of Exams 1 – 3; otherwise it is optional, and counts only if it improves your course grade.**