

Astronomy 301: Introduction to Astronomy Fall 2014 — Unique Number 48500

- Meetings:** TTh 9:30–11 AM, in WEL 3.502
- Course Website:** <http://www.as.utexas.edu/astronomy/education/courses.html>
- Instructor:** Chris Sneden, RLM 17.206
 Office Phone: 512-471-1349
 Home Phone: 512-343-0004
 email: chris@verdi.as.utexas.edu
 website: <http://www.as.utexas.edu/~chris/>
 office hours: TTh 11:15–12:15 (back from class)
- TAs:** Vignesh Gnanasambandam
 Office: RLM 15.202
 Phone: 512-920-8579
 email: vignesh.sambandam@gmail.com
 office hours: MW 11:00–12:00
 Jinsong Liu
 Office: ECJ 3.301
 Phone: 512-739-0816
 email: jinsongliu@utexas.edu
 office hours: WF 8:30–9:30
- Required Text:** *Astronomy: A Beginner's Guide to the Universe*
 authors: Eric Chaisson & Steve McMillan
 Books a la Carte
 Plus MasteringAstronomy
 with eText – Access Card Package
 (7th Edition) Addison-Wesley
- Grading:** Seven half-hour-ish in-class tests
 Optional final exam: Can replace grades of two previous exams
 Probable exam cadence: every other Thursday
 Probable exam dates: Sep 11, 25; Oct 9, 23, Nov 6, 20, Dec 4
 Probable final exam date: Dec 10, 9 AM
 Exam review sessions: the days prior, 3-4 PM and 7-8 PM
- Other Notes:** Students with special needs may request appropriate
 accommodation; call UT's office of Services for Students
 with Disabilities, 471-6259.
 (<http://www.utexas.edu/diversity/ddce/ssd/>)
 Department Web Site: <http://www.as.utexas.edu/>
 Telescope Viewing: <http://outreach.as.utexas.edu/public/viewing.html>
 McDonald Observatory: <http://www.as.utexas.edu/mcdonald/mcdonald.html>
 Astronomy picture of the day: <http://apod.nasa.gov/apod/astropix.html>

Subject Matter, Goals, and Miscellaneous Comments

What is it? To whom am I speaking? Astronomy 301 is an introduction to astronomy that is intended for non-science-major students. If you have a lot of math/physics background you probably should register instead for AST 307, which is aimed at science and engineering majors. Natural Science majors cannot count AST 301 (probably even as an elective).

What are prerequisites and expectations of the students? There are no formal course prerequisites. We expect that any UT student should be able to do well in AST 301. Some math at the level of high school algebra will be required for the tests. We will expect you to practice and be comfortable with such things as scientific notation, and simple manipulation of basic astronomical formulas. Are you rusty in such math skills? We will be happy to help you! The math level should in no way challenge anyone who has met the UT math requirement.

How will grades be determined? Approximately every two weeks there will be an in-class test that will last about 30 minutes. Seven of these tests in all will be given. There will be regularly-scheduled, non-compulsory help/review sessions. They are informal, and will focus on helping you with the course material. We will structure these sessions to suit your needs, so please come loaded with YOUR questions. In general, attendance at these sessions will probably help you more than coming to our official office hours. We will give an *optional* final exam. If you choose to take it, this comprehensive exam will replace your two lowest test grades. Because this option is available, there will be no makeup opportunities for the in-class tests. The final grades will utilize the full UT +/- grading system.

Textbook & class notes? We will use the 7th edition of *Astronomy: A Beginner's Guide to the Universe*. The loose-leaf form is used here obviously to help you save money. You will be given instructions on how to access the on-line materials referred-to by the book. On the class website I will be posting copies of the slides that accompany my lectures.

Additional Comments We want you to do well in this course! To that end, a few points should be emphasized. *First*, we encourage you to ask questions in class. This is of course not always easy in a large classroom (and I often partially darken the lecture hall to project astronomical images, etc. If I don't see your hand raised, feel free to speak up! *Second*, remember that the only truly stupid question is the unasked one. *Third*, use the class web site. Lecture slides and announcements are regularly posted on this site.

Your progress through this class will be greatly enhanced through interactions with us. Take advantage of the regular review sessions. My home telephone number is listed on the first syllabus page. Use it at any reasonable hour of the day or evening (<11 PM or so). See also my electronic mail address. However, I *GREATLY* prefer phone calls to emails, because I receive on average about 30-40 emails/day on various work-related matters, and email exhaustion simply sets in on some days. I would far rather talk to you in person or over the phone than go back and forth with emails.

A warning must be given, one that is generally applicable to all astronomy faculty members here. In our courses you interact with professional astronomers. The good part is that you get very close to current research, and that can be very exciting. The bad part is that we tend to travel a bit (most obviously to observatories in remote and exotic locales), and probably I will need to excuse myself from class a couple of times during the semester. At present I have only one scheduled absence, when I am away from Austin September 12-19. This means that I will miss the classes on September 16 and 18. A substitute lecturer will

pinch-hit for me in class on those occasions. All class meetings will occur as scheduled.

Preliminary Course Outline (subject to revision)

Our presentation of topics will follow a fairly traditional path. First, we will discuss what might be called “natural phenomena”, which are those things that you can easily observe and understand without any telescopic equipment. Then we will introduce the physical concepts (gravity, light properties, etc.) that are necessary to understand the major astronomical phenomena. Then there will be exploration of astronomical objects in a standard near-to-far manner: first our solar system, then stars and the interstellar medium sort-of together, then our Milky Way Galaxy, and finally galaxies and the structure/evolution of the whole Universe.

There is a lot of material that we could cover in this course! Many more fascinating topics are discussed in our textbook than we can possibly cover in one semester. A major part of the lectures will be devoted to taming and shaping the material, picking and choosing what to emphasize as we go along. It is important that you attend the lectures and look at the web site slide sets to guide your study. Here is a rough outline of topics and when they might arise during the semester, but it is subject to adjustments later.

1. Week 1: Natural phenomena – Text Chapter 0
2. Week 2: Motions, mostly orbits – Text Chapter 1
3. Week 3: Light, the bringer of information – Text Chapter 2
4. Week 4: Practical tools, telescopes – Text Chapter 3
5. Week 5: The solar system in general – Text Chapter 4
6. Week 6: Earth, Moon, terrestrial planets – Text Chapters 5,6
7. Week 7: Giant planets and debris – Text Chapters 7,8
8. Week 8: Our Sun in brief, star observations – Text Chapters 9,10
9. Week 9: Star formation and evolution – Text Chapters 11-12
10. Week 10: Stellar deaths, wimpy & spectacular – Text Chapter 13
11. Week 11: The Milky Way – Text Chapter 14
12. Week 12: Galaxies normal and weird – Text Chapter 15
13. Week 13: Galaxies and their part in the Universe – Text Chapters 15,16
14. Week 14: The birth and growth of the Universe – Text Chapter 17
Time permitting: Is there life out there? – Text Chapter 18

Memo to Undergraduate Astronomy Students Regarding Astronomy Courses

adapted from <http://www.as.utexas.edu/astronomy/education/memo.html>

To prevent misunderstandings, we wish to clarify the ground rules set by the Astronomy Department for our undergraduate courses. These courses operate with mutual responsibilities between faculty and students.

For each of our classes, a written syllabus will be handed out at the first class meeting containing a description of the course, the material that the course will cover, all requirements in the course, and an explanation of what fraction of your grade is derived from each activity. These requirements or percentages are not to be changed during the semester.

Special notes for AST 301: This course, although designed for non-science majors, is nevertheless a science course. You will be exposed to scientific reasoning in the course, which you will be required to use on tests and in solving homework problems. Only simple mathematics is used; the level varies from instructor to instructor. Students in the College of Natural Sciences should note that AST 301 and AST 309 courses do NOT count towards fulfilling your degree requirements. Consider our AST 307 course for science majors.

There will normally be help available outside of class at least once a week (more often in the larger sections); if you have too much trouble understanding the material, or other problems arise, such as illness, please let your instructor know as soon as possible. Don't let the problem continue until the end of the semester, for it may then be too late to find a solution. *You should not need to pay for any outside tutoring.* The outside help that is provided with the courses should be adequate. If you need extra help, please see your instructor first. He or she can probably arrange help at no cost. Should you still feel the need of a tutor, please remember that astronomy graduate students cannot tutor for money without special permission from their chair and college dean. The Sanger Learning Center maintains a list of tutors, and runs sessions on general study techniques and math review. Many of their services are free: JES A332A, phone 471-3614.

Note that our undergraduate courses are taught by faculty, who are also professional astronomers. In addition to their obligations to you and the other students in this and other courses, our faculty have responsibilities to their graduate students and to remain professionally competent through individual research. As a consequence, your instructor may occasionally need to be away conducting research or attending a scientific meeting. Usually a faculty member will conduct the class when the regular instructor is absent.

We expect, and usually find, honesty in our students. Your instructor will explain any special rules, such as the encouragement of genuine collaboration (not copying!) among students on homework assignments and projects. However, submission of another's work or cheating on examinations are automatically grounds for failure in the course and reporting to the Dean of Students.

For general questions about undergraduate courses, please consult Rachel Walker in the Astronomy Student Office, RLM 15.204, rachelw@astro.as.utexas.edu. This office handles many student matters including adds at the beginning of the semester. If you have any complaints or problems, please try to work out a solution with your instructor first. If you and your instructor cannot find an amicable solution, then please see either: Milos Milosavljevic (Astronomy Undergraduate Studies Chair; Office, RLM 17.220; Phone 471-3397), or Dan Jaffe (Chair of the Astronomy Department; Office, RLM 15.218; Phone 471-3302).

If you are in crisis and need immediate assistance, please telephone the Office of the Dean of Students Emergency Staff: 512-471-5017. They can help you with a number of services, and may be able to contact your professors for you if you have an emergency that prevents you from attending class. (<http://deanofstudents.utexas.edu/emergency/>)

Finally, all students enrolled in undergraduate Astronomy courses are encouraged to attend our free Astronomy events (e.g. star parties, public lectures) and/or visit the 9-inch telescope on the roof of Painter Hall and the 16-inch one on the roof of RLM. For more information, read the flyers posted on the 4th floor of R.L. Moore Hall, call our Skywatchers' Report at 471-5007, or check the Astronomy Department webpages at <http://www.as.utexas.edu/>.

Upon request The University of Texas at Austin provides appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-4641 TTY.