AST 103L
Observational Astronomy

Classtime: Wednesday 7-9pm
Unique Number: 47630
Classroom: RLM 13.132

Instructor:

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471-7418
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Office hours:
by appointment

Purpose

This course is designed to provide you with hands-on experience in the techniques of basic astronomical observations. Along the way you will become familiar with the scientific methodologies and analytical skills necessary to interpret data and make your own discoveries. We hope to convey to you some of the excitement and satisfaction that we ourselves derive from investigating and understanding the physical world around us, while simultaneously inspiring and motivating you to do the same. We will observe the night sky using the naked eye, binoculars, and small telescopes, as well as undertake indoor laboratory activities. In a typical semester there is more cloudy weather than good weather, so we will generally spend a good portion of the class doing indoor activities. The class is usually made up of students with diverse science backgrounds but is generally oriented to non-science majors.

Prerequisites and Corequisites

You must have credit for or be concurrently registered for either AST 301 or 307. You cannot receive credit for both AST 103L and AST 101L, 302, or 303.

Materials

Required: Each student is required to have the following materials:

- Valid email address that you must check regularly
- Calculator with basic scientific functions

You should let your instructor know well in advance of class if you have trouble accessing the materials.

Optional/Suggested: The following materials are not required but may be helpful to you during the course of the semester.

- Planisphere (also called a starwheel; we recommend the 10" Miller Planisphere). We should have enough of these in the lab but if you would like your own, they supposedly are for sale at the Co-Op.
- Flashlight with red filter. Useful for reading/writing in the dark.
- Meterstick or yardstick. We should have enough of these in the lab but feel free to bring your own.
- Computer-based all-sky programs such as *Starry Night* (www.starrynight.com; available on our lab computers), *Voyager* (http://www.carinasoft.com/), *Stellarium*

(www.stellarium.sourceforge.net), or *Celestia* (http://www.shatters.net/celestia/). The latter two are freely available and are most highly recommended.

- ◆*Astronomical Calendar 2011* by Guy Ottewell (2011, Universal Workshop: Greenville, SC)
- ◆*Peterson Field Guide to the Stars and Planets* by Jay M. Pasachoff (2006, Houghton Mifflin Company: New York) [mandatory for the serious amateur and some professionals!]
- ◆Colored pencils (for drawing what you observe)
- ◆Your 301 (or 307) textbook

Course Format and Grading

This course will include both outdoor observing and in-class laboratory activities. Each activity will be graded based on your performance (see section on Collaboration), the quality of your work, and your demonstrated understanding of the concepts involved. All set-ups, observations, tables, charts, graphs, conclusions, answers to questions, etc. must be recorded on the handout for that lab. The final grade will be based on your cumulative performance over all labs. The grading scale is provided below. *Absolutely no incompletes will be given, no exceptions.*

Grading scale:	Grade	Activities Passed
	A	100 - 85%
	B	84 - 70%
	C	69 - 55%
	D	54 - 45%
	F	< 45%

There are two required labs (see below) that are worth 35% of the final grade. The other regular labs are worth 65% the final grade, with each being approximately 6%. There are no tests or quizzes; there is no final exam.

If you do not earn >50% on a lab, you may rework it and have it graded again to earn back up to half the missed points (e.g. a lab graded at 40% may be reworked to earn back up to 30%, for a final grade of 70%). Each lab can be graded a maximum of two times: the initial attempt and a single revision.

Late Work: Typically, exercises are conducted in class and the lab report is due the following week in class. Lab reports not turned in on time will be penalized by 5% the total grade for each day it is tardy after the due date. In addition, any rework attempts are also due after one week.

Required Exercises: Most of activities will be conducted in class, but there are two exercises, "Astronomical Motions I. Motions of the Night Sky" and "Astronomical Motions II. Celestial Motions," that require the student to apply basic and fundamental principles of observational astronomy outside of class. These are considered ***required*** exercises because they exemplify the foundation of the course. While Motions I is a regular lab that is due the week following its assignment, Motions II is a long-term observing exercise that requires the student to make multiple observations of the sunset and moon over a specified period of time. These two exercises ***are more heavily weighted than the other activities*.** Motions I and Motions II are worth 15% and 20% the final grade, respectively. These labs are included in the grading scale above. A student who does well on all the regular labs must still attempt both of these labs in order to receive an A. The required labs should be treated seriously!

Blackboard

Blackboard is the course management software of the University of Texas at Austin (http://courses.utexas.edu/). We will be using this system as part of our class this semester. The lab activities we do each week will be posted to the class website. We encourage you to familiarize yourself with the lab activity before you arrive in class; the more prepared you are, the more quickly and efficiently you will be able to complete the assignment. We will also use this system to communicate with you; make sure your email address in the Blackboard system is one that is current and checked regularly. Typically, you will receive one email a week from your instructor indicating the plan for that week: which lab we plan to do, whether you should come prepared to observe outside, etc. Because our activities are significantly affected by weather and observing conditions, it is important for you to stay updated on what is going on.

Academic Honesty

All work must be your own. Plagiarism, collusion, and/or cheating **will not** be tolerated. Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. You may work with others only under the conditions described in the section "Collaboration".

Collaboration

Science is a collaborative effort. Therefore, you are expected to work with your classmates, share ideas, discover together, and learn from each other. However, you must adhere to the rules:

- Clearly indicate your partners' name(s) at the beginning of all collaborative work;
- Distribute work fairly with each person making an equal contribution to all parts;
- Everyone writes his or her own notes, observations, calculations, reports, etc.;
- Everyone turns in his or her own lab report.

Attendance Policy

Attendance is mandatory. As a laboratory course with limited meetings, you cannot afford to miss class. All absences must be excused in advance, including religious holy days, which by University policy require 14 days advance notification. Any unplanned absences must be taken up with your instructor as soon as the situation arises. These will be evaluated on a case-by-case basis. *There is no excuse for failing to inform your instructor in a timely fashion.* Unexcused and excessive absences will adversely affect your grade. We will do our best to help you make up a lab that you must miss for an excused reason, but because our activities are affected by weather, we cannot guarantee you will be able to make up any specific lab.

Lab Equipment

Special equipment, including small telescopes, binoculars, cameras and developing equipment, mirrors and lenses, and the like are available for some activities and to students wishing to pursue advanced topics. You may check out some of this equipment from the Educational Services Office (RLM 13.122). *You are responsible for any equipment you check out.* Contact your instructor or Lara Eakins in the Educational Services Office at 471-1307 (lara@astro.as.utexas.edu) for more information.

Stargazing Opportunities

Two buildings on campus have rooftop telescopes available for public viewing, free to both students and the general public. The RLM 16-inch reflecting telescope is open on Wednesday nights and the Painter Hall 9-inch refractor is open on Friday and Saturday nights. Visit the website at http://outreach.as.utexas.edu/public/viewing.html for the latest information.

The UT Astronomy Students' Association (http://www.as.utexas.edu/~asa/) hosts star parties on a roughly monthly basis (location TBD). Additionally, the Wild Basin Wilderness Preserve (http://www.wildbasin.org/) also holds public viewing nights. You are strongly encouraged to attend star parties to gain more observing experience than time allows during class. Students who have documented proof of attendance at any extracurricular stargazing opportunities will receive proportional extra credit (ask your instructor first).

Information on astronomically interesting phenomena and local astronomy-related events, as well as updates of the RLM and Painter Hall observing schedules, can be obtained by calling the UT Skywatcher's Report at 471-5007.

Students With Disabilities

Any student with a documented disability who requires academic accommodations should contact Services for Students with Disabilities at 471-6259 (voice) or 232-2937 (Video Phone) as soon as possible to request an official letter outlining authorized accommodations.

Course Content and Schedule

The schedule of the class is determined by the weather each week. Below is a list of activities that we may do over the course of the semester. We will not complete all of these activities.

Indoor:

- Introduction to Starry Night
- Angles and Parallax
- Revolution of the Moons of Jupiter
- Reflecting Telescopes
- Refracting Telescopes
- Properties of Telescopes
- Spectroscopy 101
- Hubble Redshift-Distance Relation
- Determining the Velocity of a Comet
- Direct and Retrograde Motion
- Building a Deep Sky Database
- The Solar System
- Galactic Rotation

Outdoor:

- Motions I: The Night Sky
- Motions II: Celestial Motions
- Targeted Observing Exercise 1
- Targeted Observing Exercise 2
- Constellations
- The Moon
- Properties of Telescopes