

## AST 103L, Astronomical Observations Syllabus

Course Number: 45980

Fall 2019

Monday 7-9 pm

PMA (RLM) 13.132

Website: [canvas.utexas.edu](http://canvas.utexas.edu)

Role	Instructor	TA	Grader
Name	Prof. Keith Hawkins	Tyler Nelson	Alice Burington
Office	PMA (RLM) 16.228	PMA (RLM) 16.220	-
Office Hours	By appointment	Monday 2-3 pm or by appointment	-
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### Learning Objectives:

The primary goal of this course is to cover the motivation and techniques of some astronomical observations. This will be achieved using a combination of demonstrations, handouts, and firsthand experience. By the end of the course, students should understand:

- Dimensional analysis
- What is parallax and how astronomers use it to measure distance
- what various quantities (e.g. Luminosity, flux, magnitude) mean and how they are used
- Angular diameter and how it relates to physical size
- The basic properties of light (wavelength, energy, speed, intensity)
- apparent versus absolute magnitude
- what spectroscopy is and why it is a useful tool for astronomers
- how to construct a simple spectrograph
- geometric optics concepts like refraction, reflection, converging/diverging lenses

### Pre-requisites:

Some familiarity with algebra is helpful

### Materials:

A scientific calculator or equivalent is needed. Many smart phones have apps for these.

### Course Format:

The course meets for a once a week lab. Students will work in groups of 2-3. These labs make up 100% of the grades in the class. All lab assignments are weighed equally. There should be 12 labs, meaning one per week with wiggle room at the beginning and end of the semester. The lowest lab grade will be dropped. The class will not be graded on a curve.

Letter grades are based on the following table:

93.00 – 100.0% = A	80.00 – 82.99% = B–	67.00 – 69.99% = D+
90.00 – 92.99% = A–	77.00 – 79.99% = C+	63.00 – 66.99% = D
87.00 – 89.99% = B+	73.00 – 76.99% = C	60.00 – 62.99% = D–
83.00 – 86.99% = B	70.00 – 72.99% = C–	0.00 – 59.99% = F

## Course Format Continued:

### 1. Worksheets

When working on a lab when a group shares data or otherwise has identical results, the group should hand in one copy. If there is a conclusion section, each group member should write their own and staple this to the group worksheet. **Always put all group members names and date on these worksheets.** Worksheets are due the following week. **Late worksheets will not be accepted.**

### 2. Attendance

To receive credit for a lab you must be present, unless prior arrangements have been made. Except for observing labs (see below), if you are unable to attend your section one week, you can attend another section that week as long as you give me prior notice a least a week before. I will take attendance to check against the worksheets. The sections for this class are Monday through Wednesday, 7-9 in PMA (RLM) 13.132. A missed assignment can only be excused if you have doctor's notice or other documented extenuating circumstances. Please show up on time.

### 3. Class rescheduling

If a lab cannot happen because of the weather or other extenuating circumstances, I will adjust the schedule to accommodate this. A short essay (~ 750 words) will be given in the lab's place if we run out of time. I will be absence for at least one meeting during the semester because I'll be traveling. The week prior to this, we will do two shorter labs which will both be due two weeks from then.

### 4. Weather

Observational astronomers care about the weather a lot. If it's cloudy, we can't observe. Therefore, I will try to check the weather every few days during the semester and encourage you all to as well. If the weather looks dicey during your class I strongly recommend attending another section if their weather is better. If you elect to attend another observing section, let me know at least a day before your section. I'll try to post weather notices on canvas. There is no guarantee that the weather will cooperate for the whole semester. Plus, the observing labs are typically more fun and less work than writing a short essay.

## Religious Observances:

By UT policy, you must notify me of your pending absence at least 14 days prior to the date of observance of a religious holy day. If you miss a deadline for a worksheet because of a religious holy day, you will be expected to hand it in the next week.

## Class Policies:

*Communications:* The course webpage on the Canvas system will be updated with course announcements, supplementary resources, and deadlines. *It is your responsibility to check these on a regular basis.*

It is your responsibility to keep track of the administrative deadlines for dropping the course, changing to Pass/Fail, etc.

*Email:* Email is recognized as an official mode of university correspondence; therefore you are responsible for reading your email for university and course-related information and announcements. Please check your email regularly and frequently.

*Syllabus Changes:* I reserve the right to make changes to the syllabus and class schedule if necessary. If any changes are made they will be announced through Canvas and new versions will be uploaded.

## Academic Honesty:

*University of Texas Honor Code:* The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community. 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. Standards for Academic Integrity are posted at <http://deanofstudents.utexas.edu/conduct/index.php>

*Plagiarism:* As a research university, the University of Texas at Austin takes plagiarism very seriously. Don not risk getting involved in a plagiarism infraction - the consequences simply aren't worth it. Always cite your sources, and when in doubt consult a professor or librarian. You may also read more about plagiarism at the Student Judicial Services website: <http://deanofstudents.utexas.edu/conduct/academicintegrity.php>

## Accommodations for disabilities and/or family responsibilities

If you have any kind of disability, whether apparent or non-apparent, learning, emotional, physical, or cognitive, and you need some accommodations or alternatives to labs, please feel free to talk with me and discuss reasonable accommodations for your access needs. Students with disabilities may also request appropriate accommodations from the Division of Diversity and Community Engagement, and from UT's Services for Students with Disabilities. The official wording provided by the university is: The University of Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-6441 TTY or Division of Diversity and Community Engagement, Services for Students with Disabilities, 512-471-6259, [www.utexas.edu/diversity/ddce/ssd](http://www.utexas.edu/diversity/ddce/ssd).

Aside from disabilities, I recognize that students with children or family care responsibilities might require special accommodations on occasion, and they should contact me by email regarding missed or late work.

## Regarding harassment/assault:

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights violations subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, sexuality, and gender identity. Harassment of any sort will not be tolerated in this classroom or related workspaces. If you or someone you know has been harassed or assaulted, you can find the appropriate resources through the University Title IX Coordinator (512-232-3992), UT Austin Campus Police (512-471-4441), the Student Ombuds Services (which can provide *confidential* advice, resources and help; 512-471-3825), and UT Counseling and Mental Health Center (512-471-3515).

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## Approximate Course Timeline

The exact timing of labs will vary as weather and other complications arise. As mentioned earlier, some labs (noted with O) might be replaced with essays if we are unable to find proper conditions to perform the observations.

Week	Lab
Sep 9	Math Review and Constellations (O)
Sep 23	Parallax lab (O)
Sep 30	Targeted Observing (O)
Oct 7	Building a Spectrograph
Oct 14	Moon lab (O)
Oct 21	Identifying gases based on spectra
Oct 28	Stellar Spectra and Color
Nov 4	Refracting Telescope
Nov 11	Reflecting Telescope
Nov 18	Hubble's law
Dec 2	Gravity Lab