INTRODUCTION TO ASTRONOMY

Tuesday & Thursday | PAI 3.02 | 9:30a-10:45a

Instructor

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What is intro to astronomy about?

This introductory course for non-science majors will survey all of astronomy. We'll start with the ancient Greeks, and understand how their studies led to the correct model for the Solar System, moving on to studying other stars, and their orbiting extra-solar planets. We'll finish with learning about our own Milky Way galaxy and how galaxies change with time, peering back into the early phases of the Universe to see how the first galaxies to form after the Big Bang tell us how the Universe began and evolved.

By participating in this class, ***you will develop*** an appreciation for astronomy and the night sky around you. ***You will improve skills*** in critical thinking, communication and teamwork.

Course Learning Objectives: You will...

Develop a broad understanding of the nature, scope and evolution of the Universe, and where the Earth and Solar System fit in.

Improve your critical thinking and quantitative reasoning skills, and their importance in the context of the scientific process

Learn that science is a process, the world is knowable, and we come to know it through observations, experiments and theory.

Get acquainted with the history of astronomy and the evolution of scientific ideas (science as a cultural process).

Gain a familiarity with the night sky and how its appearance changes with time and position on Earth.

Each class period will have learning objectives linked to one or more of these course goals

Required Materials:

Good news, there is only one thing you need to buy for this course! It is the book ***Lecture-Tutorials for Introductory Astronomy, 3rd Edition***, by Prather, Slater, Adams & Brissenden. Do not rent or buy used. Available at the Coop or online.

Your reference text for this class is available for free online, in web view and PDF format: ***Astronomy from OpenStax***, ISBN 1938168283 **Link: www.openstax.org/details/astronomy** If you prefer a print version, you can purchase that from Open-Stax on amazon.com, but web view is recommended – the responsive design works seamlessly on any device. If you buy on Amazon, use the link on your book page on openstax.org so you get the official OpenStax print version.

A device for the InstaPoll *in-class response system* - we will be piloting a UT-developed ***free*** system through Canvas. Bring a device which will allow you to respond to my questions and get feedback.

Email Policy: I can be emailed at any time for questions of a personal nature. For questions about class content or logistics, before you email me, you ***must*** post the question to the canvas discussion board. If no one answers it after 6 hours, *or* five people chime in to say they have the same question, you may email me, including a link to the discussion post.

What is expected of me in this class?

- Attend class and participate! Work collaboratively and be prepared to share your ideas.
- Work in groups - if you're not comfortable working with others, this is not the 301 for you.
- Complete all assigned online modules on time. Make sure to take time to think deeply about the videos, and spend time with the book or come get help if you have questions!
- Don't procrastinate on the projects! Everything you need to know is in this syllabus, so get them done early!
- Take advantage of us! We are here to help you!

What happens in lecture?

- Not much lecturing! I have designed this class from the ground up to be very interactive, focusing on your attainment of the course learning outcomes. You will be exposed to the content outside of class through Canvas homework modules, which replace the typical lecture component. In class is time to work! You'll be practicing concepts which you've learned prior to coming to class through Canvas homework modules and assigned reading.
- You will only learn if you participate, thus attendance and participation are ***required***! Students messing around or not participating will be asked to leave - if you don't want to practice, you will not distract your classmates.
- A typical class day will be composed of the following:
  - Astronomy in the news – submit at the start of class.
  - Review of homework questions
  - Several think-pair-share and discussion questions.
  - Answering questions from you about the topics which may still be unclear.
  - Activities in groups, followed by whole class discussion.

How is my performance in this class assessed?

What is the grading scale?*

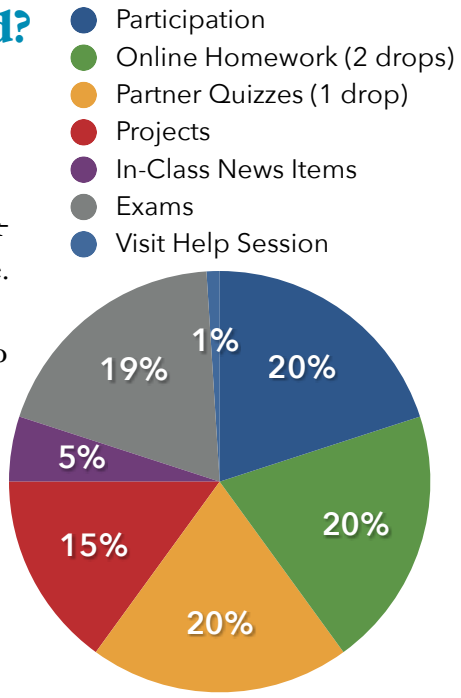
93.0 - 100 A
90.0 - 92.99 A-

87.0 - 89.99 B+
83.0 - 86.99 B
80.0 - 82.99 B-
77.0 - 79.99 C+
73.0 - 76.99 C
70.0 - 72.99 C-

67.0 - 69.99 D+
63.0 - 66.99 D
60.0 - 62.99 D-

< 59.9 F
*no rounding

Your final course grade will be determined as follows:



20% - In-class participation: You will receive credit for this component by answering in-class think-pair-share questions through InstaPoll on your device. This grade will be calculated as an average of the grade for each class, where each class grade is equal to the percentage of questions you submit an answer to. Although ***makeup participation points will not allowed***, I realize that you may need to occasionally miss class, or have a technical problem submitting a question. For this reason, Canvas will automatically drop your three lowest participation class grades. Responding to the InstaPoll questions from outside the classroom is a form of academic fraud.

20% - Online homework modules: Online modules will be assigned to be completed before most classes, and will be due before the start of that class. These include (up to four) lecture videos, followed by a multiple choice quiz. The point values vary with the length of the module. Your two lowest homework grades will be dropped. Any missed homeworks beyond those two will count as a zero. There is no late work accepted.

20% - In-Class Partner Quizzes: There will be six bi-weekly, in-class, short answer 2-person quizzes. ***There will be no makeup quizzes***, but your lowest score will be dropped. If you miss two quizzes, then one will count as a zero. These quizzes are non-cumulative, and will cover set lecture periods.

19% - Exams: There will be two in-class multiple-choice exams. The first will be on October 17th, and will cover everything to that point. The second is on Dec 5th and will cover all material between the first exam and that point. There will be no final exam. ***There are no drop or makeup exams.***

5% - Astronomy in the News: You will submit two astronomy news items that you have read throughout the semester. We'll pick a few per class, bring up the website, and if chosen you will come to the front of the class and explain your article to everyone, and moderate a short discussion. You must submit at least one news item by Oct 15th. The second one of each must be completed by Dec 3rd. See Canvas for details on where to look, and how to turn one in.

15% - Projects: There are three projects, each worth 5% of your total grade. Project #1 (due Oct 15) is a paper about a recent astronomy news item; Project #2 (due Nov 7) requires you to attend a telescope observing night on Campus, and write up a paper on the experience; Project #3 (due Dec 3) is to observe the Moon over the course of one phase cycle, and write a Moon journal. Details on all three are on their assignment page on Canvas. Any of these can be turned in early!

1% - Visit Help Session: Visit one of Prof. Finkelstein's help sessions by Friday Sept 6th with your completed questionnaire notecard (see instructions during first class).

What are other policies on exams, assignments, and other course structure?

Course Website:

Canvas page for this course:

https://utexas.instructure.com/courses/1256493

Where can I find... ?

Canvas will have the following:

1. Important announcements
2. Lecture slides
3. Weekly assignments and modules
4. Syllabus
5. List of Learning Objectives
6. Gradebook

Canvas will be our main form of communication, so make sure to check it regularly and stay up to date on assignments and communications.

Course Webpage: The course webpage on the Canvas system will be updated with course announcements, homework and reading assignments, and deadlines. It is your responsibility to check these on a regular basis. Please come to class prepared, having done the assigned module. Also please be prepared to participate in in-class discussions and activities, this is for your benefit.

Late work: Late work is not accepted. Makeup (or early) quizzes or exams are not offered. *However*, I understand that life events happen, so if you are unable to turn an item in on time or attend a quiz or exam, contact me ***in advance of the due date***. Note that being busy with other classes will not be considered a valid excuse. If you miss class for a sponsored University event, and you contact me ***in advance of the due date***, we can discuss accommodations.

Course Conduct: Please silence cell phones before you enter the classroom. ***No texting or using your cell phone*** during class except for use in specified classroom activities. Please do not pack up or leave class early unless you have talked to me in advance, as a consideration to us and your fellow students. Students may use laptops to take notes. Students found to be using their computers for non-class activities will be a distraction to those around them, and will be asked to leave, and will not earn participation for that day. If laptop distraction becomes a problem, I reserve the right to reverse this policy. ***Be respectful of others***, especially during in-class peer discussion times, and even if you disagree with them.

Extra credit: There are no opportunities for extra credit.

Instructor Travel: As part of being a professional research astronomer I will occasionally travel and miss class. I will do my best to minimize the impact of this, and will endeavor to maintain Canvas communication while traveling. When absent, another awesome UT faculty member will lead the class.

Students with Children: I recognize the difficulty of being a full time student with children. If you have children, or other family commitments, please come see me to discuss any modifications of the course policies which will maximize your success in this course.

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.

Frequently Asked Questions:

Do you record the in-class lectures?

Yes! Although there is not much in-class lecturing, it may still be useful to review the video of our think-pair-share discussions, or the debrief after the lecture tutorials. This class is using the Lectures Online recording system. This system records the audio and video material presented in class for you to review after class. Links for the recordings will appear in the Lectures Online tab on the Canvas page for this class. You will find this tab along the left side navigation in Canvas. To review a recording, simply click on the Lectures Online navigation tab and follow the instructions presented to you on the page. You can learn more about how to use the Lectures Online system at http://sites.la.utexas.edu/lecturesonline/.

How do I succeed in this class?

The best way to succeed is to prepare and participate. Do the modules ahead of time, and take the time to watch them in full (and multiple times if needed). When in class, buy in and ***participate***! The green book is *your* textbook and you are the author. If you don't work hard on it, you won't have it to study from!

How do I study for the quizzes or exams?

1) Study the lecture tutorials. Don't just read them, re-do them! Cover your old answers, then check your new answers against them. Work in a group if you can!

2) Go over the in-class PDFs, and practice the think-pair-share questions.

3) Re-watch the relevant module videos, find concepts which you feel less secure on, find those concepts in the book, and read up.

4) Come to help sessions!!!

I missed a quiz or exam, when can I make it up?

There are no makeup quizzes or exams. The only exception to this will be:

1) If you have a major life event, **and you notify me ahead of time.** Depending on the situation, I may ask you to contact Student Emergency Services for assistance.

2) I am contacted by Student Emergency Services, and they request a makeup.

3) You are absent for a university-sponsored event, ***and*** you notify me ahead of time.

I'm sick, and can't come to class today, what do I do?

You don't need to email me! Stay home and get better (you can miss 2-3 classes, and still receive a full participation grade). Still do the module before class (late submissions are not allowed), and after class, download the PDF to see what you missed. Do the missed lecture tutorials, in a group if you can find some classmates, or on your own. If you have to miss multiple consecutive classes, please contact Student Emergency Services, and they will let me know if they feel you should be allowed to make up for missed participation.

I need to leave class early? How do I make sure I don't lose participation?

Participation is counted through InstaPoll. You will not receive credit for questions you miss.

I forgot to do my homework before class, can I turn it in this afternoon?

No, late homework is not accepted. You get to drop your two lowest homework grades, so make sure it doesn't happen again!

I forgot to turn in my project! Can I turn it in this afternoon?

No, late projects are not accepted. Don't let this be you, turn it in early!

Its December, and I haven't been observing or started my moon journal!

There's nothing I can do to help you. Don't let this be you - do these early in the semester!

I got a zero in the gradebook for something I did or turned in!

We can make mistakes when inputting 200 grades! If you believe there is a mistake in the gradebook, stay calm, just send myself or one of the TA's an email, and we'll investigate.

University and Course Policies:

Academic integrity: 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. Ethical conduct is expected at all times. For example, answering Voting Questions to receive credit when you are not in class is unethical. Incidences of academic dishonesty will be reported to Student Judicial Services. For more specific information go to: http://deanofstudents.utexas.edu/conduct/academicintegrity.php.

Plagiarism: As a research university, the University of Texas at Austin takes plagiarism very seriously. Do 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

Academic accommodations (SSD): The University of Texas at Austin provides upon request appropriate adjustments for qualified students with disabilities. We are committed to making an inclusive, accessible and welcoming classroom environment for all students. For more information, contact Services for Students with Disabilities at: 512-471-6259 (voice), 512-410-6644 (video phone), ssd@austin.utexas.edu (email) or online at: **http://diversity.utexas.edu/disability/**

Personal or Family Emergencies: If you experience a personal or family emergency (death in the family, protracted sickness, serious mental health issues) that prevents you from attending an exam or forces you to miss multiple days of class, you should contact Student Emergency Services in the Office of the Dean of Students http://deanofstudents.utexas.edu/emergency/. They will work with you to communicate with your professors and let them know of your situation.

Religious Days: A student who is absent from a class or examination for the observance of a religious holy day will be permitted to make up the missed work, if notice is given at least fourteen days prior to such an absence.

Class #	Dates	Topics	Online Modules and Assignments Due	Pre-Class Reading	In-Class Lecture Tutorials
1	Aug 29 (Th)	Introduction to Class	— — —	— — —	— — —
2	Sept 3 (T)	Tour of the Universe	Module #1	Chapter 1 (1.1-1.9)	Motion of the Sky
3	Sept 5 (Th)	The Celestial Sphere	Module #2	2.1, 4.1	Position, Motion
4	Sept 10 (T)	Motions	Module #3	2.1, 4.1	Path of the Sun
5	Sept 12 (Th)	Seasons & **Quiz 1**	Module #4	4.2	Seasons
6	Sept 17 (T)	Phases of the Moon	Module #5	4.5	Cause of Moon Phases, Predicting Moon Phases
7	Sept 19 (Th)	Ancient Observables	Module #6	4.7	Observing Retrograde Motion, The Parsec
8	Sept 24 (T)	Copernicus and Kepler	Module #7	2.2, 2.4, 3.1	Kepler's 2nd Law, 3rd Law
9	Sept 26 (Th)	Galileo & **Quiz 2**	Module #8	— — —	— — —
10	Oct 1 (T)	Science & Climate Change	Module #9	2.3, 8.3, 8.4	Greenhouse Effect
11	Oct 3 (Th)	Climate Change / Newton	Module #10	3.2, 3.3	Newton's Laws
12	Oct 8 (T)	Nature of Light & Blackbody Radiation	Module #11	5.1, 5.2	EM Spectrum, Blackbody Radiation
13	Oct 10 (Th)	Atoms, Spectra & **Quiz 3**	Module #12	5.3, 5.4, 5.5	Analyzing Spectra
14	Oct 15 (T)	Solar System	Module #13, **Project #1, 1st news item**	7.1, 7.2	Sun Size
—	Oct 17 (Th)	**Exam #1**	— — —	— — —	
15	Oct 22 (T)	Telescopes	— — —	Chapter 6	Telescopes
16	Oct 24 (Th)	Stars	Module #14	16.1-16.3, 15.1-15.3	Apparent and Absolute Magnitudes
17	Oct 29 (T)	Stars, cont'd & **Quiz 4**	— — —	17.1	The HR Diagram
18	Oct 31 (Th)	Evolution of Stars	Module #15	17.2, 17.3, 18.4	Star Formation and Lifetime, Stellar Evolution
19	Nov 5 (T)	Exoplanets #1	Module #16	22.1, 22.4-.5, 23.1-.2	Doppler Shift, Motion of Extrasolar Planets
20	Nov 7 (Th)	Exoplanets #2	Module #17, **Project #2**	5.6, 21.3-21.5	Detecting Exoplanets with the Transit Method
21	Nov 12 (T)	Life & **Quiz 5**	— — —	— — —	— — —
22	Nov 14 (Th)	Milky Way & Galaxies	Module #18	25.1,25.2,25.4, 25.6	Milky Way Scales, Galaxy Classification
23	Nov 19 (T)	The Expanding Universe	Module #19	26.1-26.3	Looking at Distant Objects, Hubble's Law
24	Nov 21 (Th)	Galaxy Evolution	Module #20	Chapter 28	Expansion, Lookback Time and Distance
25	Nov 26 (T)	Mysteries & **Quiz 6**	— — —	— — —	— — —
26	Dec 3 (T)	Beginning/End Universe	**Module #21, Project #3; 2nd news item**	Chapter 29	Making Sense of the Universe and Expansion, The Big Bang
—	Dec 5 (Th)	**Exam #2**	— — —	— — —	