ASTRONOMY 301
Introduction to Astronomy
Spring 2017

Unique No. 47785
TuTh 12:30-1:45 pm, WEL 3.502

PROFESSOR
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Required Textbook and Software:

Textbook: We ***recommend*** "***We're Texas: Astronomy"*** by Winget, Hermes, and Shawl et al. (any edition). The text will be useful for an additional perspective to that of lectures. I recommend it also if you want additional information on any topic. The questions on the quizzes and homework will be developed from the in-class content. We have indicated the correspondence of specific lectures with the recommended text in the course outline section below.

Software: **Canvas.** We will be using Canvas for lecture notes, assignments and grades. We will also use if for homework, in-class quizzes and "think-pair-share" exercises we do in-class.

LEVEL OF COURSE

This course is a descriptive survey of the field of astrophysics; it will be infused with new astronomical and space related discoveries as they occur during the semester. The course will provide you with a perspective on the universe: its scale, structure, contents, and evolution. It will cover major scientific revolutions in human thought including special and general relativity and quantum mechanics. All revolutions are built on the work of those who went before us. Studying how this has happened in the past will prepare us for a discussion of eagerly anticipated new scientific revolutions. These may be based on understanding dark matter and dark energy, discovering intelligent life elsewhere, or they may be based on ***your own ideas***, things no one has thought of before; our studies will bring us to the very boundaries of human knowledge. Astronomy, as all of science, is based on breaking through these boundaries and discovering things about the universe no one has ever known before.

TIPS

Make a habit of looking over the lecture slides before coming to class each day and reviewing your notes from the previous class. This will allow you to take the opportunity at the beginning of each class to ask questions about something you may not have understood from the previous class. To relieve anxiety of the type, "What sorts of things will he ask …" we will make practice quizzes based on actual quizzes given previously in the class. Do your own work in this class, but study in groups of three—this is an optimal size for reasons I will explain in class.

QUIZZES AND GRADES

Education research has shown that ***low-stakes testing*** improves learning, therefore we adopt it here.
There will be a total of eight in-class quizzes. ***Anything we talk about in class will be fair game for the quizzes***. Your final quiz grade will be determined from your best six quiz scores, weighted 15% each, for 90% of your final grade—i.e. we will drop your two lowest quiz grades. Homework assignments, equally weighted, will constitute 5% of your overall grade, the in-class questions will account for the remaining 5%. We will use **Canvas** for Homework questions and in-class questions. Note: One of the homeworks will be an astronomical observing assignment. You have the **option** to complete a semester project, on a topic related to a major life-interest of yours, to replace the two lowest of your remaining six quiz scores. The TAs or I must approve the topic in advance of the topic deadline. As a result of this grading policy, ***we do not give make-up quizzes***. This course is finished at the end of class on May 4th; there will be ***no quiz during the finals period***.

I will not emphasize mathematics, but an understanding of basic algebra will be helpful to you.

We reserve the right to award students immediately below a grade boundary a "plus" grade (e.g., B+, C+), based on attendance and in-class participation—this will be gauged using Canvas questions posed in-class. Note that because there is no "A+" in our current system, we assign no "minus" grades.

OPTIONAL SEMESTER PROJECTS

The optional semester project is very open-ended, but should relate astronomy to something you are passionate about. **This is a chance for you to be creative, and spend time researching and thinking about astronomy from a perspective that interests *you***. We want you to learn and enjoy the experience, mindful also that the optional project counts as much as two quizzes, so the work you put into it will be reflected in the grade you get out of it. The deadline for optional semester project approval is **Thursday, 16 Feb 2017**. Please send an email to **Patrick** or **Wei** to make sure that we have your topic written down and not just simply verbally approved. You may not work in groups for the optional project; all work must be your own. Stuck without an idea? Start with these questions: What is a major life interest—an academic major or a hobby? What do you enjoy creating or doing, and how can you connect it to astronomy? If you are having trouble finding a connection of an interest or passion to astronomy, come see us; we are here to help you! You may turn projects in early, but the **firm deadline** for turning in projects is **Thursday, 4 May 2017**. You may turn projects in after class or during our office hours. You are free to submit your project earlier than the firm deadline. The projects will be graded about a week after the last class day. Project grades will be posted on Canvas. After they are graded, the projects will most likely end up in my office or the adjacent research lab for safekeeping. Please schedule a time via email to pick them up from us once the semester is complete. Your project grade **cannot hurt** your grade. If it is lower than your lowest two quiz grades, it will be dropped, so it doesn't hurt to try!

DUMB QUESTIONS

There is no such thing as a dumb question. ***ASK!!*** If you have a question, it is likely that most of the rest of the class will have the same question. I know it is a large class and that can be intimidating, but ***please*** ask. You can also send an email with your question.

WEB*: Please visit our* ***Canvas*** *page to find updates. We will place our web-based resources on* ***Canvas.***

FIRST DAY HANDOUT LINK:
http://www.as.utexas.edu/astronomy/education/memo.html

STUDENTS WITH DISABILITIES
Upon request, the University of Texas at Austin provides appropriate academic adjustments for qualified students with disabilities. You can find resources and contact information online at the web site for the Disability Resources Center: http://www.utexas.edu/disability

TENTATIVE TEST SCHEDULE
There are eight in-class quizzes. We have currently ***estimated*** that the eight multiple-choice quizzes will be on the following dates. ***We reserve the right to change these dates, if necessary.***

COURSE OUTLINE (WITH SUGGESTED READING) AND TENTATIVE DATES FOR QUIZZES

Week 1 (1/17,19)	Course Introduction; A Tour of the Universe (Ch. 1,2)	
Week 2 (1/24, **26**)	The History of Science; Basic Concepts; The Night Sky. (Ch. 3,4)	**Quiz 1**
Week 3 (1/31,2/2)	The Earth and Moon (Ch. 6)	
Week 4 (2/7,**9**)	The Earth and Moon (Ch. 6)	**Quiz 2**
Week 5 (2/14,16)	The Terrestrial Planets (Ch. 7)	
Week 6 (2/21,**23**)	The Jovian Planets (Ch. 8)	**Quiz 3**
Week 7 (2/28,3/2)	Comets; Solar System Formation; Planets Around Other Stars (Ch. 5)	
Week 8 (3/7,**9**)	Light, Matter, and Energy (Ch. 9)	**Quiz 4**

UT SPRING BREAK (3/13-3/18)

Week 9 (3/21,23)	Light; Telescopes (Ch. 10)	
Week 10 (3/28,**30**)	Stars and Their Radiation (Ch. 11)	**Quiz 5**
Week 11 (4/4,6)	Stellar Classification (Ch. 12,13)	
Week 12 (4/11,**13**)	Star Formation; How Stars Shine (Ch. 14)	**Quiz 6**
Week 13 (4/18,20)	The Death of Stars; Black Holes; Star Clusters (Ch. 15,16)	
Week 14 (4/25,**27**)	Galaxies; Active Nuclei; Supermassive Black Holes (Ch. 17,18,19)	**Quiz 7**
Week 15 (5/2,**4**)	The Big Bang; Cosmology (Ch. 20)	**Quiz 8***

***Note:** Quiz 8 is only one week after quiz 7. As a result, 15 of the 25 questions on quiz 8 will be taken from the first 7 quizzes. This is an opportunity to raise your quiz average!