

Astronomy 1400 Section 002: Solar System
Spring 2009

Instructor: Dr. Susan Holtz

Office: Science Building Room 120

Office Hours: TT 9:30 am to 10:30 am and MW 1:00 to 1:50. Other office hours by appointment: please see me immediately before or after any class or e-mail me, and we will arrange a time to meet that fits your schedule.

Contact Information: phone: (806)742-3761, e-mail: susan.holtz@ttu.edu
Please use “Astronomy 1400” as part of the subject of the e-mail!!

Textbooks: **The Solar System, The Cosmic Perspective**, Fifth Edition, by Bennett, Donahue, Schneider, and Voit. Published by Addison Wesley. It should come with Starry Night software. Also for the lab: **Solar System Astronomy Lab Manual** by the Department of Physics, Texas Tech University

Lecture: MWF 2:00 pm to 2:50pm in Sc 007

Laboratory:

There is a **required** laboratory that is part of this course. You will receive one grade for the lecture and laboratory combined—they are not separate courses. In **addition** to the weekly lab meetings in the Science Building (room Sc121), you will be required to visit the Texas Tech Observatory and perhaps other off-campus locations announced in lab partly to make some nighttime observations. All necessary information regarding these activities will be posted on the web site <http://www.phys.ttu.edu/~gwen/index.htm> or given out in the labs. The laboratory meets in SC 121 beginning the week of January 12. If no lab is listed on your schedule, see Dr. Holtz immediately.

Course Purpose:

This course will satisfy a four hour laboratory science requirement. It has no pre-requisites. It serves well the student that is interested in astronomy and the student who is not science oriented but needs to satisfy the science requirement. I feel the course is very important to both groups of students. For those interested (or who inadvertently become interested), this course will give you the tools to continue astronomy as a lifelong interest. For those not really interested, it is still very important for you to have a basic understanding of science if you are to take your place as an educated member of society because the population at large determines the role of science in society—not just the scientists.

Course Description:

We begin by acquainting ourselves with some basic ideas and observations of modern astronomy. Once the modern view is expounded, we back up and historically account for how this view came about. Next the basic principles of physics that allow astronomers to learn things about the universe are covered. At this time we also examine how telescopes work, and how astronomers use satellites and space probes. Once we are done with these preliminaries, we move on to the solar system covering topics such as how and when does a solar system form. Then we take a close look at our own solar system through comparative planetology. Here we consider the geologies and atmospheres of the terrestrial worlds and the physics of the Jovians. We also account for asteroids and comets. Lastly we look at solar systems about other stars than our Sun to put our own solar system into perspective. In addition to the topics above, we will also be keeping abreast of current space missions and any exciting celestial events that might come our way.

Expected Learning Outcomes:

Upon completion of this course, students will:

1. Understand the motions of celestial objects (Sun, Moon, Stars, Comets, Planets, and Asteroids) in the sky
2. Understand astronomy basics (For example: What is the ecliptic? Celestial equator? Equinox? Solstice? When do eclipses occur? ...)
3. Know the history of astronomy.
4. Understand the physics of astronomy at an elementary level and know how astronomers use it to learn about the universe.
5. Understand how telescopes work.
6. Understand the physical principles involved in the formation and maintaining of planetary atmospheres.
7. Understand the physical principles involved in the geology of the terrestrial worlds.
8. Understand why the Jovians formed as they did
9. Understand how a solar system forms
10. Study the nature and detection of extrasolar planets
11. Have the tools needed to continuing enjoying astronomy on their own as a hobby if desired. By enjoying I mean that the motivated student will be able to use a simple telescope to make observations of and identify celestial objects.

Methods for Assessing the Expected Learning Outcomes:

Exams, Class Discussions, Classroom Assessment Techniques, and Polling the class.

Determining your course grade:

- If you do not attend four labs or do not complete four labs or get a zero on four labs your **course grade** is automatically an **F** **regardless** of how well you are doing in the lecture portion of your grade.
- Determining the **laboratory grade**: this will be discussed at your first laboratory meeting. Evening sessions at the off-campus observatory or other locations will be part of your grade.
- Determining the **lecture grade**: there will be three tests. Of these three test grades, the two highest will each be 30% of your lecture grade. **There will be no make-up for missed tests after one day from the time the test is given.** If possible please let me know early if you are going to miss a test since there is a possibility that you may take the test in advance. The final exam will count 40% of your lecture grade. The final exam is required and cannot be dropped. The questions on the three tests and final will be taken from material covered in class, from assigned reading in the text, and from assigned work outside of class.
- Mathematically,

$$\text{Lecture grade} = 0.30 \times (\text{highest test score}) + 0.30 \times (\text{second highest test score}) + 0.40 \times (\text{final exam score})$$

Your course grade will be weighted as follows:

The laboratory is 25% of your course grade

The lecture is 75% of your course grade

This means that your course grade is equal to 25% of your lab grade plus 75% of your lecture grade. Mathematically,

$$\text{Course Grade} = 0.25 \times (\text{lab grade}) + 0.75 \times (\text{lecture grade})$$

Tentative Test Dates for the lecture:

February 9th, March 11th, April 20th

Final exam date:

Monday May 4th at 4:30 pm (place to be announced in class).

Grading Scale:

90-100= A; 80-89.9=B; 70-79.9=C, 60-69.9=D, Below 60=F

Attendance to the lecture portion of Astronomy 1400:

Attendance will be taken but will not affect your grade in the lecture portion of the class. A spirit of honesty will be maintained in the attendance policy: if the number of people in the class does not equal the number of people checked off on the attendance sheet, no curve will be issued if the class as a whole performs poorly on a test. Note you are responsible for everything that we do in class, so it is to your advantage to attend. (Remember not attending lab will cause you to fail this course!)

A Class Policy for Astronomy 1400: Earth Creatures Beware...

- Reading newspapers or unrelated material, texting or talking on your cell, visiting with your neighbor, and irrelevant activities are not allowed in this class because it distracts your teacher and the other students. Do these things and you will be asked to leave the class.
- **NO LAPTOPS** or any other electronic devices are allowed in class unless need for such device for reason of a disability is documented by AccessTECH..

Standard Texas Tech Policies that apply to all of your classes:

- Any student who, because of a disabling condition, may require some special arrangements to meet the course requirements should contact the instructor as soon as possible so that necessary accommodations can be made. Proper documentation must be presented from Student Disability Services (AccessTECH). For the complete description of this policy see Texas Tech Operating Policy 34.22 online.
- Any student absent for a religious holiday should make that intention known prior to the absence and shall make up missed exams in accordance with Texas Tech Operating Policy 34.19.
- Students will foster a spirit of academic integrity, and they will not present work as their own that was not honestly performed by them. For a complete description of this policy see Texas Tech Operating Policy 34.12.

Tentative Course Outline for the Lecture: Important Note: This will be your reading assignments unless otherwise changed in class!! This schedule may change!

Date: week of	Topics to be covered*	Important Dates
January 5th	Course Syllabus, Chapter 1	
January 12th	Chapter 1	Labs Begin
January 19th	Chapter 2	
January 26th	Chapter 3	
February 2nd	Chapter S1	
February 9th	Chapter 4	February 9 th Test 1
February 16th	Chapter 5	
February 23 rd	Chapter 6	
March 2 nd	Chapter 7 and 8	
March 9 th	Chapter 9	March 11 th Test 2
March 16 th	Spring Break	
March 23 rd	Chapter 9, Begin Chapter 10	
March 30 th	Chapter 10, Begin Chapter 11	
April 6 th	Chapter 11	
April 13 th	Chapter 12	
April 20 th	Chapter 13	April 20 th Test 3
April 27 th	Chapter 13	
May 4th		May 4 th Final

- This is only a partial list relating to the reading assignments in the text book. Added to the topics in the text will be current mission news from NASA, current events in the night sky such as possible meteor showers, eclipses, and interesting oppositions, and current locations of the Moon, planets and other objects of interest. Other topics may be included as the need arises. **Test material will cover the Text assignments listed above as well as the additional material covered in class or assigned as work outside the class room.**

Helpful and interesting web sites in astronomy:

Astronomy 1400 LAB web site (always “refresh” or “reload” to see the most current information posted)

<http://www.phys.ttu.edu/~gwen/index.htm>

NASA picture of the day:

<http://antwrp.gsfc.nasa.gov/apod/>

Heavens above: find when the International Space station passes over Lubbock

<http://www.heavens-above.com/>

Download a free sidereal clock:

<http://www.radiosky.com/sidclockdownload.html>

Check out the weather in space and subscribe to space weather news:

<http://www.spaceweather.com/>

NASA: check out all past current and future missions by the USA in space

<http://www.jpl.nasa.gov/>

Mars Global Observer images:

<http://www.msss.com/>

Space Telescope Institute:

<http://www.stsci.edu/stsci/org/>

Astronomy magazine:

<http://www.astronomy.com/astronomy.html>

Bad Astronomy: Astronomy hoaxes

<http://www.badastronomy.com/>

Sky and Telescope magazine:

<http://skyandtelescope.com/>

Mars clickworkers: help catalog craters on Mars

<http://clickworkers.arc.nasa.gov/top>

Track satellites:

<http://earthobservatory.nasa.gov/MissionControl/>

Mars images

http://www.marsquestonline.org/mer/mer_viewer.php

NASA climate center:

<http://www.ghcc.msfc.nasa.gov/>

Magnetosphere and aurora:

<http://pluto.space.swri.edu/image/home.html>

Text book web site:

<http://www.astronomyplace.com/>

Flight lounge:

http://www.nasa.gov/externalflash/afl_front/index.html

McDonald Observatory: local interest in this west Texas Observatory

<http://www.as.utexas.edu/mcdonald/mcdonald.html>

Important: Record Sheet for Astronomy 1400 Section 2

You must fill in all blanks and turn in this sheet in order to remain in Astronomy 1400!!!!

By signing my name below I am indicating that I have received and understood the syllabus for Astronomy 1400, and I know that if I do not attend 4 labs (or do not complete four labs or get a zero on the lab) I will fail this course.

Printed Name: _____

Signed Name: _____

Date: _____

Course: Astronomy 1400 Spring 2009