

ASTR 101 Section 501
Introduction to Astronomy
UNM – Valencia Fall 2015

Instructor
Stephen Klinksiek

Location
VAAS 101

Times
M - W 6:00 - 7:15 pm

Office
Academic Office

Hours
M-W 5:30-6:00 pm
or by appointment

Email
saklink@unm.edu

Phone
925-8600

Class Website:
<http://panda3.phys.unm.edu/~klink>

Course Overview

Course Description: Conceptual description of our fascinating universe: early astronomy, Newtonian, synthesis, Earth, Moon, planets, asteroids, comets, the Sun, our solar system, stars, black holes, galaxies, dark matter, dark energy and cosmological mysteries.

Student Learning Objectives:

1. Students will be aware of models and theories, for example, heliocentric and geocentric models of the universe and the Big Bang theory. Students will be able to recognize how the scientific process was involved in the development and acceptance or rejection of such models and theories.
2. Students will be able to use basic laws of physics related to astronomy to estimate answers to various problems. Students will be able to recognize metric units and correct units in which to measure various astronomical properties.
3. Students will understand basic everyday concepts like seasons, the rising and setting of the Moon and its appearance, and our place in the universe. Students will recognize valid explanations of these phenomena.
4. Students will understand environmental issues that arise in the context of astronomy, namely greenhouse gases, the ozone layer and light pollution.
5. Students will understand the origin and nature of the universe - subjects with relevance to contemporary societal issues.

Required:

- **Text**, Chaisson, E. and McMillan, S., 2010, *Astronomy: A Beginner's Guide to the Universe*, San Francisco, **Addison-Wesley**, ISBN-13 9780321605108 (Sixth Edition) **or** ISBN-13 9780321815354 (Seventh Edition).
- **Option to Text** Students may opt to purchase the MasteringAstronomy package directly from the publisher and include the e-text version of the book for a substantially lower price than the bound text. Go to www.masteringastronomy.com for details. This option will be discussed in detail at the first class meeting.
- **Bound** composition book (60 to 100 pages).

Recommended: Basic scientific calculator.

Students with Disabilities: If you have a documented disability, please provide me with a copy of your letter from Equal Access Services as soon as possible to ensure the necessary accommodations are provided for you in a timely manner.

Class Guidelines

Attendance: Attendance is mandatory for this class. Students missing the first week of class may be dropped unless they have contacted me and I have agreed to keep them in the class. Any student having 3 unexcused absences in a row or a total of 5 unexcused absences at any time during the semester may be dropped from the class.

Electronic Gismos: Use of electronic devices in class is not allowed. Please turn cell phones off *before* you enter the room. You may be asked to leave the class if you fail to keep this policy, and not be allowed to return until we have met with the appropriate authority. Laptops are welcome as long as they are being used for class work, such as the e-text book.

Grading: Grades will be issued on a 10 point system, 90 to 100 is an A, 80 to 89 is a B, 70 to 79 results in a C, 60 to 69 is a D, and anything less than 60 results in a failing grade. Plusses and minuses will be assigned by dividing each range into three approximately equal parts.

Your grades will be based on:

1. Solar Observation Project (15%)
2. In-class Projects (10%)
3. Homework (10%)
4. Vocabulary (15%)
5. Exams (7) (50%)

Solar Observation Project: Students will observe the position of the sun on the horizon during either sunrise or sunset throughout the semester. A more detailed set of instructions are at the end of this syllabus, and are available on the class website.

In-class Projects: There will be several group study worksheets given during the semester. Students will not be able to make up in-class work due to absence without a *very* good reason. If work is allowed to be made up it will be due at the start of the next class session.

Homework: All students must complete required homework consisting of problems at the end of each chapter. Problems are due before the lecture on that chapter. Late submission will result in a zero.

Vocabulary/Journal: All students are required to have a *bound* composition book (journal) which will be used for taking data for the solar observation project and definitions of terms used in the class (vocabulary). Each student will be required to enter the terms and their definitions *in the students' own words*. This assignment is described in more detail and on the class website.

Exams: There are seven (7) exams currently scheduled. Each exam will be from 30 to 50 questions in length of a mix of multiple choice and true false questions. Students will be allowed to take a new second assessment to raise their grades for the first six tests. The student will be given the higher of the two grades.

Note on Academic Dishonesty: I take academic dishonesty very seriously and may fail you the instant you are caught cheating. This is allowed under guidelines of the University as outlined in the section on academic dishonesty in the UNM Valencia Catalogue:

Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, including dismissal, against any student who is found responsible for academic dishonesty. Any student who has been judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course.

Academic dishonesty includes, but is not limited to, dishonesty in quizzes, tests or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; and misrepresenting academic or professional qualifications within or outside the University.

Tentative Schedule

This schedule may change at any time during the semester. You will be given new course schedules outlining changes as they occur.

Week	Date	Chapter(s) / Notes
1	Aug. 17 - 19	Intro to the course and Chapter 0
2	Aug. 24 - 26	Chapter 1 and Test 1
3	Aug. 31 - Sept. 2	Chapter 2
4	Sept. 7 - 10	Holiday and Chapter 2 continued
5	Sept. 14 - 16	Chapter 3 and Test 2
6	Sept. 21 - 23	Chapter 4 and Chapter 5
7	Sept. 28 - 30	Chapter 6 and Test 3
8	Oct. 5 - 7	Chapter 7 and Chapter 8
9	Oct. 12 - 14	Chapter 9 and Test 4
10	Oct. 19 - 21	Chapter 9 and Chapter 10
11	Oct. 26 - 28	Chapter 11 and Chapter 12
12	Nov. 2 - 4	Test 5 and Chapter 13
13	Nov. 9 - 11	Chapter 14
14	Nov. 16 - 18	Chapter 15 and Test 6
15	Nov. 23 - 25	Chapter 16 and Chapter 17
16	Nov. 30 - Dec. 2	Chapter 18 and Review
17	Dec. 9	Final Exam 5:30 - 7:30 pm

Solar Observation Project and Journal

The Solar Observation Project: Each student will perform a semester long observation of the motion of the sun along the horizon as it rises or sets. This project is an example of using an experiment to test a theory. To make this project meaningful, the student must identify what physical attribute the Earth has that this experiment actually tests. The project has three parts that must be completed and turned in during the last week of class. Each student must turn in a journal containing the observation data, a (single) sketch/picture showing where the sun set/rose relative to the horizon for each observation, and a one page conclusion which must include the theory or proposed physical attribute being tested and how your data either verified or denied it.

Instructions:

1. Determine if you want to observe sunrise or sunset. You cannot change this option once data taking has started.
2. Choose a location where the sunrise/sunset observations will occur. This location must **not** change during the duration of the semester. Make sure there are sufficient landmarks on the horizon to allow an accurate depiction of where the sun rose/set each time data is taken.
3. Make a *accurate* sketch of the horizon. You can also take a few digital photographs creating a wide angle view of the horizon and print them on plain paper . This option works very well. A mark will be placed on the sketch or photo each time the student observes a sunrise or sunset. Do NOT look directly at the sun at any time. This single sketch or photo (with the 30 or so marks) must be turned in at the end of the semester, so don't lose it.
4. Data must be taken twice each week with the observation days at least two days apart. A schedule of sunsets on Mondays and Fridays would be an example of a good choice for data taking. The data consists of a record of the observation in your Journal (see below) and a mark of where the sun set on your sketch/picture of the horizon (see above).
5. A record of each observation must be hand written in your journal. The record has to contain the date and (approximate) time of the observed sunrise/sunset as well as the seeing conditions or anything else of interest. It is suggested that each entry in the journal be numbered and that each rise/set position on the sketch/picture have that number associated with it.
6. A typewritten conclusion of your experiment is required. The semester of observations is to be used to conclude whether or not you have verified or denied the theory being tested. The conclusion should not be longer than one page, double spaced and must contain the theory your are testing, your experiment, and its results.

The Vocabulary Journal: Students are required to have a **bound** composition book of at least 60 pages for a semester long project. There is a list of terms used in the book and in class at the class website located at:

<http://panda3.phys.unm.edu/~klink>

The website address must be entered exactly as shown to be accessed. Once you have accessed the webpage, follow the links to your school and class section. The vocabulary words will be on pages listed at the bottom of the class page.

Completion of the vocabulary is worth 75 percent of the project. The remaining 25 percent will be allocated based on how the student extends the usefulness of the journal toward learning the material and passing the class. A suggestion would be to enter the vocabulary by chapter, adding condensed notes of important points and applications, and include some detailed solutions to problems.

The student is allowed to use his/her journal when taking any test, so it is important for the student to maximize its' learning potential.