ASTR 101L: Descriptive Astronomy Laboratory

Rica Sirbaugh French, Professor of Astronomy

Fall 2013 **Class #1133**

W 7:00 pm – 9:50 pm **OC 4529**

http://blackboard.miracosta.edu

Rica S. French
tinyurl.com/rfrenchmcc
760.757.2121 x6506
rfrench@miracosta.edu
Office: OC 4512

Office Hours:
M 3:00–4:00pm
T 12:00–12:30pm SAN café
others by appointment

Blackboard is your first source for information

Required Materials

planisphere (starwheel) for 30°N latitude (the Miller 10" is recommended)

flashlight with red filter

2 string-bound, quadrille-ruled notebooks

1 large blue or green exam booklet

meterstick or yardstick

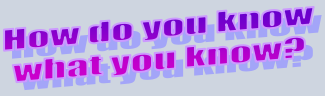
reliable internet access

email, checked regularly

scientific calculator (?)

Hmmmm...

- What causes seasons?
- What causes moon phases?
- Why does the night sky change during the year?
- How does a telescope work?
- What do other galaxies tell us about the formation, structure, evolution, and fate of the Universe?
- How old is the Universe?



What does it mean to "do" science?

This introductory course is a hands-on introduction to methods and techniques in observational astronomy and data analysis. Emphasis is placed on the collection, presentation, and interpretation of observations. The only pre-/co-requisite is ASTR 101. Realize that *astronomy is a science*. This course emphasizes primarily *qualitative* comprehension, but *quantitative* analyses are sometimes required. You must perform calculations and graphical analyses with appropriate proficiency. I hope to convey to you some of the excitement and satisfaction that astronomers derive from investigating the physical world around us while simultaneously inspiring you to do the same.

You cannot teach a man; you can only help him to find it within himself.

Galileo said this hundreds of years ago. Socrates knew it thousands of years ago. Decades of our own research prove that ***deep conceptual understanding requires mental conflict and struggle!*** You must commit to and spend an appropriate amount of time and effort constructing your own knowledge. I am here primarily as a *facilitator* to guide you through activities that *actively* engage you by helping elicit your preconceptions, confront any conflicting ideas, and resolve issues by learning to be metacognitive. To be successful you must prepare for class properly and follow through on assignments. **It is not what I do that matters; it is what *you* do. Ultimately, *you* are responsible for making the most of your own learning experiences.**

Policies

Late/Make-up Work: No such thing; for any reason. There are safeguards built in to accommodate life (see the grading scale on next page).

Attendance: Mandatory. The course is built as a learner-centered environment. You must attend class *prepared* and participate accordingly. This includes maintaining a regular presence on Blackboard and keeping up with all assignments. Absences, tardiness, leaving early, ignoring Blackboard and those assignments, etc. disrupts the learning environment and may prevent you from passing certain labs.

Academic Integrity: Required. ***Any*** form of academic dishonesty may result in the maximum possible penalties. See MiraCosta Board Policy (BP) 5500, Administrative Procedure (AP) 5500, BP 5505, AP 5520, and the college catalog.

Collaboration: Necessary. Science is, by nature, collaborative. You are *expected* to engage each other while adhering to some rules (see BP 5505):

- distribute and credit work fairly with everyone making equal contributions, and
- everyone uses his/her own words unless otherwise instructed.

Classroom Etiquette: Focus! ***Any*** disruption of the learning environment may result in your removal from class and possibly disciplinary action. See MiraCosta BP 5500, AP 5500, AP 5520, and the college catalog.

Note-Taking & Recording Devices: Recording is explicitly prohibited. *Taking notes* – not *copying* – is a skill you are expected to refine in a general education course.

Appropriate Dress: Dress for the weather and conditions at the observing site.

Laboratory Equipment: Be careful and follow the rules for handling equipment.

Overall Grade:

use scale below ("total" = count ALL labs); then reduce for Motions I, II, and/or pre-labs if necessary

Labs Passed	Grade
total – 2	A
total – 3	B
total – 4	C
total – 5	D
total – ≥ 6	F

Learning Objectives:

- Explain how the interactions of the Sun-Earth-Moon system are responsible for the lunar phases and associated rise/set times for the Moon, then use this knowledge and reasoning to interpret observations and make predictions.
- Determine how the Earth's orientation with respect to the Sun correlates to seasons. Construct a model for planetary seasons and demonstrate the effects of axial tilt.
- Measure and chart the positions of stars in the northern night sky to establish one's planetary latitude and calculate the rotation rate of the Earth, evaluating the results and critiquing the methods.

Overarching Goals:

- Witness, appreciate, and employ the nature and process that is science through the eyes of astronomy.
- Appreciate the practicality and relevance of astronomy to your everyday life.
- Comprehend the main ideas and develop the "big picture".
- Develop critical reading, thinking, and problem-solving skills useful in a variety of situations.
- Foster a lifelong interest in astronomy and relevant current events.
- Look up once in awhile!

Workloads for College Courses

Based on post-secondary educational guidelines, you should expect to average three hours per week outside of class for each unit of credit attempted (full term courses).

I do not give grades; you earn your grade.

Your grade is based on the total of your pre-lab quizzes and the number of labs you pass (see below). You may drop two labs without impacting your grade, subject to the exceptions in "***Required Exercises***" below. Incompletes can only result from "incomplete academic work for unforeseeable, emergency, and justifiable reasons." See the college catalog for more information.

Laboratory Activities (Pass/No Pass) **–** Unless otherwise instructed, you must always write a complete laboratory report. Each lab is graded "Pass/No Pass" based upon effort, quality, demonstrated understanding, etc. If you do not pass a lab, you may rework the problematic parts and have it regraded two more times (see below). You must handwrite in non-erasable ink on the front sides of the notebook pages. Leave the page backs for potential reworks. Absolutely no typewritten or loose pages or white-out. **The instructor must sign off on your work before you leave class.** Labs not in an approved notebook or meeting these conditions will result in a permanent "No Pass" for that lab. Prior to writing your first lab report, you will receive further instruction and a sample for reference.

Required Exercises **–** You are allowed to drop two labs without penalty, excluding both "Astronomical Motions" I and II, which emphasize the most basic and fundamental principles of observational astronomy. Motions I is a regular "in class" lab; Motions II is a long-term exercise conducted on your own. **You will lose an additional letter grade for each of these two labs not passed,** i.e. only passing one of them means the highest grade you can earn is a "B"; not passing either means a "C" is the maximum grade.

Pre-Lab Quizzes **–** Pre-lab quizzes are required and must be completed on Blackboard *before* coming to class: they disappear 30 minutes before class time on the due date. Each can be attempted only twice, keeping the highest score. Failure to earn at least a 70% on one results in a permanent "No Pass" for the affected lab. At the end of the term, your cumulative pre-lab quiz total must be at least 70% or you will lose an additional letter grade. **The "Syllabus Quiz" is an attendance requirement online in Blackboard: you will be dropped if you do not complete it before the due date and time.**

Deadlines & Reworks **–** Labs that are not turned in on time receive a permanent "No Pass." For labs turned in on time, the graded first attempt is returned the following week. If necessary, you have *until* (*not during!*) the next class to submit reworks up to two times in order to earn a "Pass." **Reworks are only graded during office hours or appointments with you physically present.** All deadlines are posted on Blackboard.

Final Exam Period **–** Wednesday, 11 December, 7:00 pm – 9:00 pm

Stargazing Opportunities

MiraCosta holds free public star parties during regular semesters. Visit the Astronomy Program website or call 760.757.2121 x6201. Blackboard has links to other sites.

Important Dates

Your responsiblity!

19 Aug	First day of classes (full term)
23 Aug	Last day to add
30 Aug	Last day to drop without a W and be eligible for refund
23 Sept	Last day to file for P/NP
15 Nov	Last day to drop with a W
09 Dec	Last day of classes (full term)
10-16 Dec	Final Exams

Special Accommodations

A student with a verified disability may be entitled to appropriate academic accommodations. Contact the Disabled Students Program and Services Office at 760.795.6658.