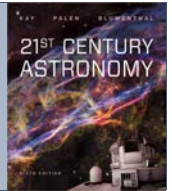




# ASTR 201: Introductory Astronomy

## Spring 2020



Rica Sirbaugh French, Professor of Astronomy  
[rfrench@miracosta.edu](mailto:rfrench@miracosta.edu)

Help Session: M 10-11am ONLINE  
Help Session: W 10-11am @ OCN STEM Center

<https://miracosta.instructure.com>

Canvas is your first source for information!

### Intelligence, ability, and talent can be developed!

#### Required Materials

Lecture Tutorials for Astronomy, 3e, Prather et al. © 2013 Pearson Addison-Wesley, ISBN: 0321820460  
**EVERY CLASS!**



Colored ABCD card  
**EVERY CLASS!**

access to 21st Century Astronomy, 6e, Kay, Palen, & Blumenthal © 2019 Norton, ISBN: 9780393675504 (but any format will do)

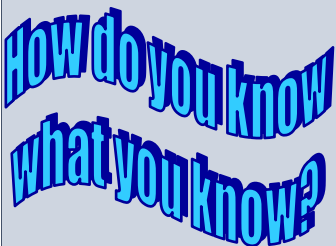
scientific calculator

reliable internet access

email, checked frequently

appropriate commitment

an open mind...



Hmmmm...

- What causes seasons?
- Moon phases?
- Why does the night sky change during the year?
- How does a telescope work?
- Do stars die?
- How does the Sun shine?
- Are there planets around other stars?
- How many galaxies are there?
- How big is the universe?
- How old is the universe?
- Are we alone?

### The entire Universe...in one semester!

This introductory course surveys the entire universe with an emphasis on analytical, mathematical, and problem-solving skills. *Quantitative reasoning* and *qualitative comprehension* are both expected in addition to the required mathematical and analytical proficiencies (MATH 64 or 102 is a prerequisite). 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. Research shows that humans must construct their own knowledge: *cognitive conflict and rigorous intellectual discourse are required to elevate your understanding*. As facilitator, I will guide you through carefully designed intellectually engaging learning sequences that elicit your preconceptions, confront conflicting ideas, and resolve issues. **Successful students help each other become metacognitive and develop their critical reasoning abilities, quantitative literacy, evidence-based problem-solving skills, and communication skills by practicing regularly. It is not what I do that matters; it is what you do. Ultimately, you are responsible for your own level of preparation, engagement, and mastery.**

### Policies

- **Late/Make-up Work:** None, for any reason. There are safeguards built in; see the grading scale. **Successful students plan accordingly.**
- **Preparation & Attendance:** Mandatory. Lecture alone is insufficient for developing a robust understanding, so our active learning environment is an opportunity to work towards mastery. By engaging earnestly with your peers you will develop a more expert-like understanding. **Successful students regularly have all necessary materials, are prepared, timely, and participate fully in all aspects of the course.**
- **Collaboration:** Necessary. Refer to above course philosophy and previous bullet point.
- **Class Etiquette:** Focus! *Disruptions of the learning environment are not tolerated!* See MiraCosta [BP/AP 5500](#), [AP 5520](#), and the [college catalog](#). **All electronic devices will be silent and out of sight. Violations are not tolerated!**
- **Academic Integrity:** Required. Your work must be unique and original, even after collaborating. *Academic dishonesty is not tolerated!* See MiraCosta [BP/AP 5500](#), [BP/AP 5505](#), [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 develop in a general education course.
- **Response Time:** Emails are returned within 48 hours, *excluding weekends and holidays.*

### Help Sessions & the Nordson STEM Learning Centers

In person and online help sessions are open to all students (see top). The STEM Centers offer free tutoring, workshops, talks, career seminars, counseling, study space, materials and equipment check-out, and more! Contact the [STEM Center](#) at 760.757.2121 x6388. Earn bonus points with each help session and STEM Center login after the first ones.

### Special Accommodations

A student with a verified disability may be entitled to appropriate academic accommodations. Contact [Disabled Students Program and Services](#) at 760.795.6658.

### Workloads for College Courses

You should expect to spend approximately two to three hours per week outside of class for each unit of credit attempted (full term courses).

Overall %	Grade
≥ 90	A
80 – 89	B
70 – 79	C
60 – 69	D
≤ 59	F

### Learning Objectives:

- Demonstrate an understanding of lunar phases by determining and charting multiple positions of the Moon, analyzing the data, making predictions, and evaluating the results given actual lunar data.
- Determine how Earth's orientation with respect to the Sun correlates to seasons. Construct a model for planetary seasons and demonstrate the effects of axial tilt.
- Given a set of physical conditions, demonstrate an understanding of Newton's laws and gravitation by distinguishing variables from constant quantities and manipulating equations to predict the behaviors of masses.

### Overarching Goals:

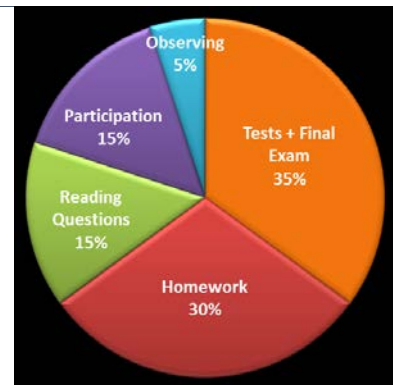
- Witness, appreciate, and employ the nature and process that is science through the eyes of astronomy.
- Appreciate the practicality and relevance of astronomy to your everyday life.
- Comprehend the main ideas and develop the "big picture".
- Develop critical reading, thinking, and problem-solving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

### Stargazing Opportunities

[MiraCosta Astronomy](#) holds free public star parties during regular semesters. See [Twitter](#), the [website](#) or call 760.757.2121 x6201.

## I do not give grades; you earn your grade.

Everyone starts with a zero. Your grade is based on your absolute score; there is no curve. It is in your best interest to help each other learn astronomy. Incompletes can only result from "incomplete academic work for unforeseeable, emergency, and justifiable reasons." See the [college catalog](#) for more information.



- **Observing (5%)** – The observing assignments are due by the last regular class meeting before final exams. Full instructions are on [Canvas](#). *Do NOT procrastinate!*
- **Reading Questions (15%)** – Multiple-choice reading questions (RQs) are required prior to most class meetings (see the course calendar). They are electronic only (on [Canvas](#)) and due 30 minutes before class time on each due date. Each set is untimed and allows two attempts but you must finish each time you start. The higher of the two attempts per set contributes to your grade. Reading assignments are for the text [21CA6e](#) and a Reading Guide is available on [Canvas](#). **The Syllabus Quiz is a graded online attendance requirement in Canvas: you will be dropped if you do not have a nonzero score on it before its deadline!**
- **Participation (15%)** – Some activities (both in and outside of class, planned and unplanned) will be graded primarily on your level of preparation and engagement.
- **Homework (30%)** – Significant emphasis is placed on assessing how well you explain your evidence-based reasoning, both verbally and in writing. **Successful students master this skill.** You will greatly benefit from working with assistance (help sessions, STEM Center, etc.) to ensure you fully understand the evidence and reasoning that leads to correct answers. This will properly prepare you for exams. Any activity not finished in class is homework, deserving of a significant amount of out-of-class practice time. Most graded homework will be in the form of problem sets, activities, and Ranking Tasks (RTs), all of which are emphasized on tests. **Successful students practice all activities and RTs in sequence with the flow of topics (see the course calendar) and again multiple times during the course.** Prior to each test you will turn in a "portfolio" of your 10 best assignments from that test's material. They will be graded using the rubrics posted on [Canvas](#) and the final score of each portfolio scaled out of 25 points. **The RTs are PDF "fillin" forms that require using Adobe Reader [free] outside of a web browser.** *Opening the files inside of a web browser and/or using other PDF handlers rarely works properly!* A few assignments are not included in the portfolios and have separate due dates in the course calendar, e.g. discussion boards, citizen science assignments, etc.

- **Scaled Participation and Homework** – Both the "Participation" and "Homework" portions of your grade will be scaled as indicated at right. This can alleviate an occasional low score and/or missed assignment but will not make up for substantial deficits. **Note that this does not apply to your overall course grade!**
- **Tests + Final Exam (35%)** – There are four regular tests, each over material covered since the previous one, and a cumulative final exam. The fourth test is during the final exam period and the final exam is online only (see course schedule and calendar). All tests may include various question types (e.g. math problems, multiple-choice, short answer, etc.). The cumulative final exam is timed, and you may have one *handwritten* 8-1/2" × 11" cheat sheet (final exam only). The lowest of the five scores will be dropped.

Score (%)	Scaled
≥ 86.0	A
74.0 – 85.9	B
62.0 – 73.9	C
50.0 – 61.9	D
≤ 49.9	F

### Important Dates

Your responsibility!

21 Jan	First day of classes (full term)
26 Jan	Last day to add this course
02 Feb	Last day to drop w/no record + refund
21 Feb	Last day to file for P/NP
24 Apr	Last day to drop with a W
19-22 May	Final Exams
22 May	End of term