

ASTRONOMY 100, Section AX (42850): COURSE OUTLINE – Spring 2012

Essential course information for which you are responsible

Instructor: Prof. G. R. Grist

Office: 7-7320

Office Hours: Tu Th 9:00 – 9:30AM & 12:30 – 1:30PM, or by appointment

E-mail: gristg@smccd.edu

Homepage: <http://www.smccd.net/accounts/gristg/> The course webpage is linked here.

No-Question-Too-Dumb Office Hours: If my office hours are not convenient for you, email me or make an appointment; I am usually on campus most of the day Tuesday and Thursday.

Course Schedule: Tu Th, 11:10AM – 12:25 PM in 8-8304

Course Description and Prerequisites: This is an introductory course in astronomy for non-science majors. Topics covered will include the night sky and its apparent motion, the law of gravity, the nature of light, our solar system, stars and stellar evolution, galaxies and cosmology, and life in the universe. There are no prerequisites; as an introduction to astronomy, this course requires no scientific background and no mathematical skills beyond basic algebra.

Course Goals and Student Learning Outcomes: The goal of this course during the next sixteen weeks is to introduce you to the field of astronomy and to the sciences in general. I will provide you with the basis you need for an understanding of the scientific method and a foundation in critical thinking. I want each student to walk away from this course with a new appreciation for astronomy and for modern scientific practices.

By the end of the term, students will...

- Understand and be able to use the scientific method.
- Exhibit a conceptual understanding of the modern astronomical view of the Universe.
- Have improved skills in critical thinking.
- Be able to critically analyze arguments from a scientific perspective.

Required Materials: Text - *Horizons: Exploring the Universe* 11th ed by Seeds, WebAssign access code, Miller Planisphere, Scantron sheets (50 per side - 3 ea), basic calculator.

The textbook (an eBook) and homework are online and cost \$75.00. If you purchase a new textbook in the college bookstore it comes with the homework access free, otherwise you must pay \$47.00. As all the homework and chapter quizzes are presented by me, and submitted by you, via this online system, registration and use is required.

WebAssign Access Code: Section AX Class Key = skyline 4472 3545

You can find more information about getting started with WebAssign in the handout posted on my course homepage (see above).

Course Activities: These are designed for you to get the most out of this experience.

In-class Assignments: These will include group discussions, quizzes, and worksheets. expect at least one or more of these per week.

Exams – There will be three exams of equal weight given during the term. The last exam will occur during the scheduled “final exam” time. The last exam cannot be taken at another time. All exams are closed book, and closed notes.

Reading (Studying) - Check the schedule at the end of the syllabus to see what is coming next. Scan the text before lecture to prime your mind, and then after the lecture read the applicable sections along with your lecture notes for full effect.

Homework - These are online exercises that you will do on WebAssign to practice your understanding of the material. There is approximately one set for each chapter of the text. There are also some interactive elements that will help expand your understanding of the material. If you have trouble answering a question, review that material and try again.

Online Quizzes - There will be an quiz given after every two to three chapters on WebAssign. This is for you to assess your strengths and weaknesses, which help you review and to practice for the exams.

Field Observations - There will be two observing assignments during the term. These are to be done outside of class on your own time. One assignment will require a general field observation of a constellation. The other will require you to visit an observatory and do observing with telescopes. Observing sheets will be provided and an accompanying report will be defined.

Attendance and Participation: Attending the lectures is required. This is the only way for you to participate in class discussions, hear other student’s questions or ask your own, participate in group work and take in-class quizzes. You are responsible for all material presented in class, including announcements about class procedures and scheduling.

Grading: The course grade will be based on the accumulated number of points weighted according to the following percentages:

Exams	60%
In-class Assignments	20%
<u>Online and Outside of Class Assignments</u>	<u>20%</u>
Total	100%

To do well in this course, you are expected to participate fully in the course activities. This includes problem sets, reading assignments and field observations which are done outside of the scheduled class hours. College level work is expected for all assignments.

Class Environment: I try to create a class environment that is enjoyable, safe, and conducive to learning. Towards this end, it is essential that all of us show respect for one another. Specifically:

1. **Be on time for class.** You must be in your seat when the class starts. **A late arrival is the same as an absence.** If you arrive late, please enter the room quietly. **There will be no late seating for exams.** If you are late you will miss that exam.
2. **Be prepared for class.** Any work that is due (i.e. observing report) must be turned in before class starts. Bring any required materials (i.e. calculator, planisphere) with you.
3. **No electronic devices are allowed in class;** this includes, but is not limited to, phones, iPods, and laptops. **Violators will be asked to leave.** If you have a special situation that requires you to use such a device during class, see me ahead of time.
4. **Be respectful of others.** Do not talk during lectures. Do not interrupt another student - only one person talks at one time. No sleeping in class.
5. **No make ups.** Work that is missed (i.e. exams, quizzes, worksheets, etc.), or more than two class days late for due date assignments, **will be counted as zero** and cannot be made up. If you have a valid and verifiable excuse (e.g., you donated a kidney to a member of my immediate family) stop by my office and we'll talk.
6. **Do your own work.** If you turn in any work that indicates copying, you will receive a grade of zero. If you receive or give help on an examination you will receive a grade of zero. All such cases will be referred to the Dean.
7. **Smoke Free Policy.** Smoking is restricted to designated parking lot areas.

Special Arrangements: If you have a verifiable condition that will make it difficult to complete the course without special arrangements, please notify me as soon as possible.

Absences: If I note that you have four or more absences I may drop you from the course; remember, a late arrival to class is the same as an absence.

The following dates (deadlines) are administered by the college; if you need to drop the course you must do so by the last day to drop. After that date I will have no choice but to assign you a grade, and that grade cannot be a **W** or, except in rare circumstances, an **I**. **If you have concerns about your progress, lets' talk;** I may be able to help you find a strategy that will be successful for you.

Some Important Dates - See Schedule for Others

Jan 30: Last day to request a refund

Apr 26: Last day to drop with a "W"

Feb 10: Last day to drop without a "W"

May 29: Final grades available on WebSMART

☺ **FINAL EXAM: 11:10AM Thursday, May 24** ☺

Work Standards: As a college level course there are certain expectations that you must meet in your work product. This is so that you can make yourself clearly understood, allow me to grade everyone on an even basis and so that you can develop professional standards that you will use for a lifetime. You can't be expected to do something that you are unaware of, so here is a starting point that is common to all of your assignments.

All work turned in must meet the following standards to be graded:

- 1. Cover sheets:** All papers turned in must include a coversheet that is clearly labeled as follows:
Upper Left corner
 - Name - First name then last or family name (i.e. Marie Curie, A. Einstein)
 - Course and Section (ASTR 100 AX)*Center of page*
 - Title of work (for example, 'Field Observing #2: Chabot Space and Science Center').
- 2. Staples:** Use staples to hold together multiple page assignments. Loose sheets get separated and lost, paperclips snag on other papers in the stack, and report covers make stacks unmanageable.
- 3. Paper:** Use standard 8.5 x 11 sheets. Be sure that your edges are clean (i.e. No frayed and tattered spiral binding remnants).
- 4. Neatness Counts:** Your work must be reasonably neat, legible, and readable. I expect your work to be professional, comparable to what you would turn in to your employer. Use a word processor for written material (reports). Diagrams and sketches are usually better done in pencil. When writing in ink, use a blue or black. Red is reserved for corrections.
- 5. Use proper English:** When answering questions, use complete sentences (i.e. answers like "yes", or "90 times" are not OK). If you have difficulty with English for any reason, please see me so we can work something out.
- 6. Late assignments:** Assignments are due at the *beginning* of class, no exceptions. It is essential for you to turn in work on time in order to be successful in this course, just as in life. Unless you have made prior arrangements with me, points on late work will be deducted according to the following schedule:
 - *First Day Late* (beginning of class until end of that class day), *25% Deduction*
 - *Second Day Late* (next class day until end of that class day), *50% Deduction*
 - *After Second Day* (past end of class second class day); *No Credit!*

Late assignments must be given to me personally and directly to be accepted. If you leave it anywhere else (i.e. mailbox, desk, under a door) it will be forever lost and given no credit.

- 7. Group Work:** I encourage working together with other students. However be sure to create your own work product. Direct copying of assignments is not permitted, and is considered plagiarism, a violation of scholastic standards. See item 6 under "Class Environment" on page 3 of the syllabus.

Observing Opportunities: Be sure to contact these places *in advance* regarding days and hours of operation. On the day that you plan to go, verify that they are open. Remember that observational astronomy of this sort is weather dependent, just because it is clear where you are doesn't mean that it is clear 10 miles away! Also, many of these programs are run by volunteers (*that's how they can be offered for free*) so if someone gets sick they just don't open.

Chabot Space & Science Center*

Open for free public viewing every Friday and Saturday after 7:30 PM.

*Note: This is where you are required to go for the second field observation.

www.chabotspace.org/observatories.htm

San Francisco State University Observatory

Typically open two nights per week mid-week; schedule set after beginning of February.

www.physics.sfsu.edu/astronomy/observatory/

CSM Observatory / San Mateo County Astronomical Society

Once a month public observing at CSM's Observatory (Jazz under the stars) on the Saturday nearest the first quarter Moon. SMCAS holds twice monthly Star Parties at Crestview Park in San Carlos and. Other activities and public lectures are hosted as well.

collegeofsanmateo.edu/astronomy/index.asp

www.smcas.com/events/

UC Berkeley Lawrence Hall of Science

Free public viewing 3rd Saturday night each month.

www.lawrencehallofscience.org/visit/events/stargazing

Foothill Observatory Friday Evening Program

Open for free public viewing every clear Friday evening from 9:00 PM until 11:00 PM.

Currently there is a parking fee in student parking lots.

www.foothill.fhda.edu/ast/friday.htm

San Francisco Sidewalk Astronomers

Star Parties include free speakers and observing in San Francisco and Marin once or twice per month.

www.sfsidewalkastronomers.org/

Halls Valley Astronomical Group

Free group star gazing held once each month in the hills east of San Jose on the way to Mt. Hamilton and Lick Observatory.

www.hallsvalley.org/calendar.html

Spring 2012 Tentative Schedule

Week	Date	Topic	Section
0	16-Jan	Class startup, administrative tasks and questions	
		Learning styles, learning methods and science	
		Introductory Astronomy survey	
1	23-Jan	Scale of the Solar System & Universe,	Ch. 1, Appendix
		The Sky and Constellations	Ch. 2-1
		Sky Motion, Magnitudes	Ch. 2-1, 2-2
		<i>Jan 23 New Moon</i>	
2	30-Jan	Seasons on Earth, Phases of the Moon	Ch. 3-1 - 3-3
		Solar & Lunar Eclipses	Ch. 3-3
		Aristotle, Ptolemy, Eratosthenes, Copernicus	Ch. 4-1, 4-2
3	6-Feb	Brahe, Kepler and Galileo	Ch. 4-3 - 4-4
		Newton, Forces, Gravity	Ch. 4-5
		Orbits and Escape Velocity	Ch. 4-5
		<i>8 Feb Full Moon</i>	
4	13-Feb	Constellation Observation Due 14 Feb	
		Light and the Electromagnetic Spectrum	Ch. 5-1
		Telescopes	Ch. 5-2 - 5-5
		Atoms and Starlight	Ch. 6-1, 6-2
5	20-Feb	Stellar Spectra and Types	Ch. 6-3
		Atmosphere and Makeup of the Sun	Ch. 7-1
		Nuclear Fusion and the Sun	Ch. 7-2
		<i>22 Feb New Moon</i>	
6	27-Feb	EXAM #1, covering Ch. 1 - 6	
		Solar Activity and Effects on Earth	Ch. 7-3
		Distances to Stars, Brightness	Ch. 8-1, 8-2
7	5-Mar	Star Classification, H-R Diagram	Ch. 8-3, 8-5
		Binary Stars, Masses of Stars, and Stellar Survey	Ch. 8-4, 8-5
		The Birth of Stars, Main-Sequence Stars, Fusion	Ch. 9-1, 9-2
		<i>8 Mar Full Moon</i>	

Week	Date	Topic	Section
8	12-Mar	Telescopic Observation Due 13 Mar	
		Stellar Structure Main Sequence Stars	Ch. 9-3 – 9-4
		Stellar Death – Planetary Nebulae and Star Clusters	Ch. 10-1, 10-2
		Binary Systems	Ch. 10-3
9	19-Mar	Dead Stars – White Dwarfs and Binary Stars	Ch. 10-3, 10-4
		Neutron Stars and Black Holes	Ch. 11-1, 11-2
		Compact Objects with Disks and Jets	Ch. 11-2, 11-3
		<i>23 Mar New Moon</i>	
10	26-Mar	EXAM #2, covering Ch. 7 – 11	
		Our Galaxy – the Milky Way Galaxy	Ch. 12
	2-Apr	SPRING BREAK <i>7 Apr Full Moon</i>	
11	9-Apr	Galaxy Shapes and Classifications	Ch. 13-1, 13-2
		Galaxy Evolutions	Ch. 13-3
		Cosmology, the Big Bang	Ch. 15-1, 15-2
12	16-Apr	The Accelerating Universe and Current Cosmology	Ch. 15-3, 15-4
		Solar System Origins	Ch. 16-1 – 16-3
		<i>*** 21 Apr New Moon & 21 Apr Lyrids ***</i>	
13	23-Apr	Extrasolar Planets	Ch. 16-4
		Earth and the Moon	Ch. 17-1 – 17-3
14	30-Apr	Mercury, Venus and Mars	Ch. 17-4 – 17-6
		Jupiter and the Galilean moons	Ch. 18-1, 18-2
		<i>6 May Full Moon & 5 May Eta Aquarids</i>	
15	7-May	Saturn and the Shepherd moons	Ch. 18-3
		Uranus, Neptune and Dwarf Planets (Pluto, Eris, etc.)	Ch. 18-4 – 18-6
		Asteroids and Comets	Ch. 19-1 – 19-3
16	14-May	Impacts on Earth	Ch. 19-4
		Life and Its Origins	Ch. 20-1, 20-2
		Search for Extraterrestrial Life	Ch. 20-3
		21 May New Moon	
FINALS	21 May	EXAM #3, covering Ch. 12, 13, 15 – 20	