Astronomy 101: First Midterm Exam Guide
Fall 2007, San Diego State University, 2007.09.20, Prof. Leonard

The first midterm exam will be taken in class on Thursday, September 27. The examination will commence at the start of class, and you will have the full class period (1 hour, 15 minutes) to work on it. It will consist of 50 multiple choice questions.

Exam Day

When you arrive to class on the exam day, please do not take a seat until told to do so. Copies of the exam, with individual names on them, will be placed on all desks before you may sit down. Thus, before the room is set up, please wait outside the lecture room. Everything should be ready by the normal class-start time at the top of the hour.

Please bring the following to the exam:

1. A ParSCORE FORM No. F-289-PAR-L scantron form. These may be purchased at the campus bookstore and are pink in color. To save exam time, you may fill out parts of the form ahead of time. This includes:
   (a) **Top of form**: The ‘Name’ (Last, First, Middle), ‘Subject’ (Astro 101), Date (Sept. 27, 2007) and ‘Hour/Day’ (T/Th 11:00 AM or T/Th 2:00 PM, depending on your section).
   (b) **Right hand column of form**: Write and bubble in your RED-ID number in the spaces for ‘I.D. Number’. Leave the ‘Test Form’ and ‘Exam Number’ sections blank. Do not write anything on Side 2 of the form.

2. A number 2 pencil and a good eraser!

3. Your official “Exam cheat-sheet” (to be detached from the end of this packet), with your name at the top, and all the information you want inside the box.

Note that no calculators will be permitted during the exam.

About this Guide

This guide is intended to assist you with your preparation for the exam. It provides suggestions that I hope you will find useful.

→Disclaimer: This guide is not all-inclusive, and in no way should serve as a substitute for your own, self-directed preparation for the exam.

What Should I Study?

Everyone has their own best method for preparing for an exam. Here is my suggestion for a useful way to prepare for this particular test.

1. Gather together all of the weekly reading assignments, course handouts, and on-line reading quizzes that have been given out/taken since the beginning of the course. Specifically:

   (a) Weekly reading assignments 1, 2, 3, and 4. This exam will cover the material included on the weekly assignments for Weeks 1, 2, 3, and 4.

   (b) On-line reading quizzes: “Week2_quiz”, “Week3_quiz”, and “Week4_quiz”. Full solutions to all three quizzes¹ are available at the textbook web-site or from the course homepage.

¹Solutions to “Week4_quiz” will be available beginning at 12:05 AM, Wednesday September 26, on the textbook website.
If you are missing any of the weekly reading assignments, handouts, or reading quiz solutions, they are available for download from the course website:

http://sciences.sdsu.edu/~leonard/astro101

Once you are at the course web-site, simply click on the links for “Weekly Assignments”, “Class Handouts”, or “On-Line Reading Quiz Solutions”, to download and print out the material that you need.

2. Read the textbook and Course Reader readings. In my opinion, this is the single most important thing to do. While there will be some questions drawn from material presented only in the lecture, the majority of the exam will come directly from the textbook (and Reader) readings. So, (re)read the sections of the textbook (Voyages To the Stars and Galaxies) and Course Reader that have been assigned in class. Specifically, here are the sections that we have covered, and for which you are explicitly responsible:

(a) Textbook:
   Prologue: Sections 1, 2, 3, 4, 5, 6, 7 (through bottom of page 9), 9, 10.
   Chapter 1: Entire chapter.
   Chapter 2: Entire chapter.
   Chapter 3: Section 3.7 only.

(b) Course Reader:
   Pages 129 – 144: This includes the Mathematical Toolkit, and the first two sections of readings concerning the Solar System.

While reading the textbook sections, be sure to review the “reading guides” provided in the weekly handouts, as they give some indication of what I felt were the most important ideas contained in the assigned sections. As you go through each reading assignment, be sure to take a look at the on-line “tutorial” material that is available at the textbook web-site (http://ace.brookscole.com/voyages). This includes the active figures and exercises that were assigned. You may also find it useful to look at the “glossary” and “flashcards” that are available for each chapter in the tutorials.

3. Review the “Selected Powerpoint Slides” contained in the Course Reader. For each lecture, a small number of the Powerpoint slides shown in class are reprinted in your Course Reader; for this exam, this includes those slides contained on pages 19 – 44, inclusive. In general, these slides contain a substantial amount of writing (as opposed to pictures), and often provide a quick listing of the major points/ideas/people/terms that are important to have mastered in that particular subject area. While these slides do not encompass “everything” for which you are responsible, they do tend to emphasize the most important items that you want to be sure to understand. Thus, reviewing them is an important part of your exam preparation. (In fact, if you find yourself in the unfortunate circumstance of having little time to prepare for this exam, then simply reviewing these slides may be your best, and quickest, method of preparation.)

4. Look over the “Key Concepts, Terms, People and Ideas” list, from the course syllabus. Pages 9 – 16 of the syllabus (also reprinted in the Course Reader) provide a list of key items covered during the course. For this exam, the relevant terms include all of those included on pages 9 – 11 (i.e., from “Light year” to “Greenhouse effect”). In addition, the following terms were written on the board in class but are not included in the sheets, and thus should also constitute part of your review: Telescope, Johannes Kepler, gravity, conservation of momentum, weight, and asteroid belt. Being able to define/describe each of these terms is a useful way to be sure you have covered all of the major points of the chapters.
5. **Review the Powerpoint slides from the lectures.** All of the Powerpoint slides that were shown in class are available at the course web site, and may serve as a useful reminder of what was covered during each of the lectures.

6. **Review/retake the on-line reading quizzes.** The reading quizzes were designed in format and content to roughly resemble the types of questions that you will encounter on the in-class exams. Thus, they provide a useful, but by no means comprehensive, review of the material covered. Full solutions to all of the quizzes are available at the course web-site, as indicated above.

7. **Take the sample exam questions.** A sample of 5 questions is included in this *guide* that are indicative of the difficulty and content of the actual exam (in fact, an exam with 55 questions was written, and then 5 questions were randomly picked out of it to form the sample questions in this *guide*, with the remaining 50 serving as the exam itself). While 5 questions can not encompass the full scope of the test, they should give you a sense of the types and level of difficulty of the questions that will be asked.

### Where Can I go for Help?

Help is available before the exam through the *TA help room hours* (Rm. 215, physics-astronomy building), which are given at the following times:

Monday: 12 – 2 PM; 5 – 6 PM  
Tuesday: 12 – 2 PM; 5 – 6 PM  
Wednesday: 12 – 2 PM; 5 – 6 PM  
Thursday: 12 – 3 PM  
Friday: 11 AM – 12 PM; 1 – 2 PM

→ Meeting with *any* of the teaching associates will be helpful. Note, though, that the two teaching associates who are specifically involved with your section of Astronomy 101 are in the Astronomy Help Room at the following times:  
Azalee Bostroem: Monday 1 – 2 PM and Thursday 1 – 2 PM  
Emilio Enriquez: Thursday 12 – 1 PM and Friday 11 AM – 12 PM

Since Azalee and Emilio are part of your course (and have attended the lectures), they will likely be able to provide more specific guidance than the other teaching associates, so definitely seek them out. But, you are of course encouraged to go to the Help Room whenever it is convenient for you!
CLOSED BOOK, NO CALCULATORS

• Print your name and ID number on the SCAN-TRON FORM No. F-289-PAR-L.
• Mark all answers on SCAN-TRON FORM No. F-289-PAR-L. Use a #2 pencil. Completely fill in the appropriate bubble. Be sure to thoroughly erase all altered answers and stray marks! If the SCAN-TRON machine rejects your form for any (valid) reason, you will lose one point (of the 50 that are possible) from your test score.
• For true-false questions: mark bubble A if the statement is true, and bubble B if false.
• For multiple choice questions: mark the bubble corresponding to the single best answer.
• All questions carry equal weight. Read each question very carefully before answering.
• There is no penalty for guessing. Be sure to answer all questions! (Note that the SCAN-TRON machine will reject a form for which an answer is not recorded for every question.)
• Time limit: 75 minutes – budget your time appropriately! Don’t spend too much time agonizing over a tough question. Make a note of it on your exam (you may write in your exam booklet) and return to it after you have finished the others.
• Do not remove this exam booklet from the classroom. Failure to leave your test booklet on your desk will result in receiving a 0% grade for the exam.
• So: No stray marks, one answer per question, answer all questions, and leave the exam booklet on your desk when finished!

DO NOT OPEN THIS EXAM UNTIL TOLD TO DO SO!!

When you are finished, simply place the following THREE things in a stack on your desk:

• Test booklet (TOP of stack)
• Cheat-Sheet (MIDDLE of stack)
• SCAN-TRON (BOTTOM of stack)

→DO NOT leave until told to do so. Every 15 minutes (after the initial 30 minutes), those who are finished with the exam will be permitted to leave the exam room.

GOOD LUCK!!!
Astronomy 101 – Midterm Exam #1: Fall, 2007

Multiple Choice/True-False

Select the best answer for each of the following questions, and indicate your choice by filling in the appropriate bubble on your SCAN-TRON form. Be sure to read all answers before making a selection. For true-false questions, mark bubble A if the statement is true, and bubble B if it is false.

1. There are about 6000 stars in the entire celestial sphere that are bright enough to be visible at night without the aid of a telescope. Therefore, from any given point on Earth’s surface, roughly how many will be visible in the night sky at one time? (Assume, of course, that the observation takes place in a dark location, far away from bright city lights.)
   (a) About 1,500.
   (b) About 3,000.
   (c) About 6,000.
   (d) This question can not be answered, even in a rough way, since the number depends critically on knowing the observer’s longitude.
   (e) This question can not be answered, even in a rough way, since the number depends critically on knowing the observer’s latitude.

2. T or F. Rebecca places two iron weights on identical scales, and finds that the first one weighs 10 pounds while the second one weighs 20 pounds. If both weights are sent sliding across the surface of a frozen pond at 10 miles per hour, the 20 pound weight will have MORE momentum than the 10 pound weight.

3. In modern astronomy, the constellations are
   (a) specific patterns of stars that point to certain directions that are useful for navigation.
   (b) 13 specific regions of stars through which the planets and Moon appear to move in our sky.
   (c) a small number of well-defined and separate groups of stars in our sky.
   (d) 88 non-overlapping sky regions, covering the whole celestial sphere.
   (e) not well defined, since the patterns of stars that make them up continually change in the sky due to Earth’s orbit around the Sun.

4. Star ‘A’ has twice the radius of star ‘B’. The ratio of the diameter of star ‘A’ to the diameter of star ‘B’ is equal to:
   (a) 1/2.
   (b) 4.
   (c) 2.
   (d) 2π.
   (e) 1.

5. Which one of the following lists planets in order of strictly increasing distance from the Sun (nearest to farthest)?
   (a) Mercury, Mars, Saturn, Neptune, Uranus.
   (b) Venus, Earth, Saturn, Jupiter, Neptune.
   (c) Venus, Earth, Jupiter, Uranus, Saturn.
   (d) Mercury, Earth, Jupiter, Mars, Uranus.
   (e) Mercury, Venus, Jupiter, Saturn, Neptune.

(Answers – 1: B; 2: A (True); 3: D; 4: C; 5: E.)
NAME: ____________________________

Official Exam Cheat-Sheet

Below is a box within which you may write anything you would like to have access to while taking the exam. Please observe the following rules:

- Write your name at the top of this sheet, and detach it from the rest of the packet.

- All information must be written inside the box below. Nothing else is allowed to be written on this sheet (except for your name!). Nothing may be written on the back of the sheet.

- All information must be handwritten. It cannot be typed or zero graphically reproduced.

- You will turn in this sheet along with your exam booklet and scantron at the conclusion of the test; it will be returned to you along with your graded scantron.

All writing must be contained within the box above!