

**ASTR 311, Spring 2012**  
*http://astro.physics.sc.edu*

**COURSE PERSONNEL**

Prof. Carl Rosenfeld, Instructor and Course Supervisor – *lcr@sc.edu* – PSC Rm 605 – 777-8145.  
Dr. Soheila Gharanfoli, Instructor and Astronomy Center Director – *soheila@sc.edu* – PSC Rm 007A – 576-6235.  
Mr. Alex Mowery, Director of the Melton Memorial Observatory – *mowery@physics.sc.edu*.  
Dr. Dan Overcash, Associate Director of the Melton Memorial Observatory – *overcash@physics.sc.edu*.  
Numerous lab instructors and Astronomy Center staff members. You can find them listed on the course website.  
**Email is reliable. Telephone is not.**

**COURSE WEBSITE**

The URL of the course website is *http://astro.physics.sc.edu*. Here you will find links to this document, sample questions, progress check, and lab schedule. You will also find links to a rogues' gallery of lab instructors, to various other documents, and to several websites that are likely to be of interest to a student of astronomy.

**LEARNING OUTCOMES:**

1. Students, building on their understanding from ASTR 111 and ASTR 211 will continue to improve their understanding of the nature and history of astronomy as a science.
2. Students will more deeply understand how physical laws were discovered and how this knowledge has enabled astronomers to construct a worldview of the structure and history of the universe.
3. Students will understand astronomers' current construct of the universe from the Earth, through the solar system, our galaxy, and the distant universe. They will also understand the methods used.
4. Students will be able to explain:
  - a. Scientific description of the night sky and how time determines what is visible.
  - b. The physical laws that determine the orbits of the planets and when, how, and by whom these laws were determined.
  - c. The nature of light and the technology of telescopes.
  - d. The methods used to determine the nature of stars and their distances.
5. Students will appreciate the cultural and practical importance of artificial near-Earth satellites.
6. Students will understand the distinctions between science, non-science, and pseudo-science.
7. Students will learn about some astronomy related topics, search to collect references, read them, and incorporate them into a coherent scientific report.

**GENERAL INFORMATION**

This syllabus assumes that you have received credit for ASTR 111 and ASTR 211 at this institution. If that is not the case, please see the Astronomy Center Director to arrange a contract for your requirements.

Welcome to ASTR 311, a self-paced mastery oriented course. This course has no scheduled meeting times, not even an orientation session. All ASTR courses, individually or in combination, are laboratory science courses and require participation in labs. The lab sessions follow a liberal schedule, and students register themselves in the lab sessions of their choosing. The course material is divided into sections we call "units." The number of units mastered and the specific units mastered determine the course grade(s). Students demonstrate mastery of a unit by satisfactory performance on an "evaluation" administered in the Center's evaluation (EV) room, PSC 008, or by completion of a lab, or both depending on the unit. All documents and other items required to attain masteries are listed in the table below:

STUDY GUIDE	<u>Self-Paced Study Guide and Laboratory Exercises in Astronomy</u> , J. L. Safko, 12 <sup>th</sup> Ed. Available at the bookstores as a downloadable e-document. The e-document is also available for purchase online. Find the link at <i>http://astro.physics.sc.edu</i> . <b>Study Guide is a mandatory purchase for all students.</b>
TEXTBOOK	<u>Discovering Astronomy—USC</u> , Shawl, LoPresto, and Safko, 4 <sup>th</sup> Ed. The publisher has bundled the textbook with the Study Guide.
CALCULATOR	Needed for labs – must include log and trig functions, e.g. TI 25X.
SYLLABUS	This document.
EMAIL ADDRESS	An email service at which you read mail sent to <i>username@email.sc.edu</i>
CAROLINA CARD	You must have a Carolina Card with you at all times in the Astronomy Center.

The course administrators will be sending essential and time-sensitive notices to you via your University email address, *username@email.sc.edu*. It is your responsibility to ensure that this communication channel is consistently functional.

## PLACE AND HOURS OF OPERATION

The Astronomy Center occupies a *suite of rooms* on the basement and mezzanine levels of the Jones Physical Science Center (PSC). Students must come to the Center for evaluations and most of the labs. PSC 007D and PSC 005 are rooms where you may find study aids. Astronomy Center staff are frequently on duty in PSC 007 to provide tutoring. The activities of some of the units are conducted at *Melton Memorial Observatory* and other sites. The usual *hours of operation* of the Astronomy Center are Mon - Thu 9:00 AM – 8:00 PM, Fri 10:00 AM – 3:00 PM, and Sun 5:00 PM – 9:00 PM. The table of “Important Dates” at the end of this document specifies a few departures from this schedule.

## INDEX CODE AND PROGRESS CHECKING

We use a four-letter code, the “index code,” to identify you and to provide privacy. If you have a previous enrollment in an ASTR course, you already have an index code. Otherwise you will receive this code on the first occasion, on which you present your Carolina Card to staff in the Astronomy Center. You must use this code in conjunction with your *VIP ID* as credentials for checking progress and scheduling labs on the *ASTR website*. Credentials are not required to retrieve sample questions. In general the website will be available from any location that has Internet connectivity. You should check your progress regularly and promptly report discrepancies between the course records and your private records. When a student has completed all requirements for a specific unit, that unit appears in the list of units designated “AVAILABLE FOR CREDIT.” Your grade will be based upon the units in this category.

## LABORATORIES

If you take a unit that specifies a lab as part of its mastery, you must do the lab to receive credit for the unit. To pass the course, you must complete five advanced laboratory units (39-43). Advanced labs will take three hours to complete. Sessions will start in the second week of the semester. The lab of a unit may be done before or after the evaluation for that unit. Most ASTR labs meet in *PSC Z131, Z132, and Z133*. A few of them meet in PSC 105, which is external to the Astronomy Center suite.

Students must register for lab sessions at the *ASTR website*. Registration will open at 1:00 AM on Wed 11 Jan. You may not register for more than one session of the lab of any particular unit. Labs 39-43, will be offered only a few times during the semester.

Check-in for labs requires that you have passed the corresponding “pre-lab,” a short evaluation to show that you are familiar with the terminology of the lab exercises. Pre-labs for Units 39-43 require correct responses to 8 out of 10 questions, and all others are 4 out of 6. Pre-labs must be completed in the EV room during the seven days preceding the lab session. After seven days they go “stale” and must be repeated. Short video programs are available on the *ASTR website* to aid you in your preparation.

If you purchased the electronic version of the Study Guide, then in advance you must print all of the pages (in full size) from the Study Guide pertinent to the lab you will be attending and have those pages in hand at check-in time. The personalization on those pages must match your Carolina Card. Lab instructors will not accept pages printed from a different student's Study Guide. In addition to Study Guide pages you must bring to the lab a pencil, a scientific or graphing calculator such as a TI 25X, and, of course, your Carolina Card. In the case that your Study Guide is the hardcopy version, then as a condition for check-in at any lab you must have in hand the entire Study Guide.

## OBSERVATORY

The *Melton Memorial Observatory*, home to a 40 cm telescope, is open to the general public on Monday evenings, weather permitting, beginning 30 minutes after sunset. You are welcome to drop in during these hours. The observatory is located on Greene St. opposite the Russell House. Students enrolled in any of the ASTR courses have the opportunity to earn credit for up to nine units through activities at the Observatory. Units 45-48, 49/50 and 60 require attendance on nights other than Monday, and Units 55 and 59 require daytime activities at the Observatory. The schedule of Observatory sessions and sign-up sheets will be posted in the corridor outside of PSC 007C.

## GRADING SYSTEM

To be credited toward your grade units must appear on the line “AVAILABLE FOR CREDIT” (shown on the *ASTR website*). Credit for units beyond the required units may be obtained with any other units that are offered. No unit may earn credit in more than one ASTR course. To be available for credit all parts of any unit selected must be completed. The following will determine your grade:

1. **Research Project:** This project is an opportunity for you to learn in greater depth about some astronomy related topic of particular interest to you. You will do a computer aided literature search to collect references, read them, and incorporate them into a coherent report. (NOTE: Such a search should not just be a copy and paste of web pages.) Although you are welcome to read professional astronomy journals, often these journals will be difficult to understand. Articles from popular science magazines such as *Sky and Telescope*, *Astronomy*, *Nature*, *Science*, *Science News*, *Mercury*, etc. will be at a more appropriate level. You can find these magazines in the USC library and in the

Astronomy Center. You should discuss your topic with the Instructor for possible refinements in its direction throughout the semester. Each student in the cohort must have a unique topic. A suggested list of topics is available on request. **Please contact the Astronomy Center Director to have your project topic approved. Your paper must be submitted in its final form by 25 April 2012.**

2. **You must complete any of Units 16, 39, 40, 41, 42, and 43 that were not completed in previous astronomy enrollments.** The instructor will schedule a minimum number of these lab sessions but sufficient to accommodate the requirements of the students. Please check the online schedule at the *ASTR website*. If you have a problem with the posted schedule, contact the Astronomy center Director at your earliest convenience.

3. Credit for 1 unit may be earned by attending a colloquium lecture offered by Physics and Astronomy faculty. You must attend the lecture and submit a brief (1 page) report. Schedule of lectures will be announced by email to you during the semester. No more than three credits can be earned by attending the lectures.

4. Complete the following total number of Units. Units credited via item 3 above count toward this total. Do not include any units previously used toward a grade in any prior ASTR 111 enrollments.

**Grading Table**

<b>GRADE</b>	<b>TOTAL UNITS NEEDED</b>	<b>GRADE</b>	<b>TOTAL UNITS NEEDED</b>
A	12	C (S)	7
B+	11	D+ (U)	6
B	9	D	4
C+	8		

If your college permits, these courses may be taken on a Pass/Fail basis. The requirements for “S” are the same as the requirements for “C.” (See the tables above.) Obtain the necessary form from your dean’s office. The form requires you to enter the name of the ASTR Instructor, but it does not require the Instructor’s signature.

Incompletes are given only in cases of unanticipated illness, accident, work-related responsibility, or family hardship. A request will be considered only if the student has shown proportional progress towards a passing grade during that portion of the semester not covered by the exigency. A request for an incomplete must be in writing (email qualifies), in detail, and must clearly explain how the circumstances fit the eligibility requirements. It must be submitted no later than the last day of classes. Supporting documents must be submitted as hardcopy. An interview with the Astronomy Center Director will also be necessary.

**NUMBER OF TRIES PER DAY**

You may take evaluations and pre-labs for as many different units per day as you wish. For a particular unit, however, the daily limit is three, and at least 30 minutes must intervene between attempts. After four unsuccessful attempts on any of the units you should bring your lists of missed objectives to an Instructor or to a senior student staff member at the help desk. Staff in the EV room are not available to work with students. Experience shows that consultation with staff efficiently lubricates the path to mastery.

**STUDENTS WITH DISABILITIES**

If you have a disability, it is essential that you speak to the Astronomy Center Director early in the semester to make the arrangements necessary to support a successful learning experience. You must also arrange for the Office of Disability Services to provide a Letter of Accommodation to the Astronomy Center Director. Although the Astronomy Center suite is not wheelchair accessible, the ASTR courses readily accommodate wheelchair-bound students. Such students must attend labs in PSC 105, which entails some compromise in the selection of lab meeting times.

**CODE OF ACADEMIC RESPONSIBILITY**

As a condition of enrollment in this course we require you to sign a pledge of adherence to the Codes of Responsibility of the University and the Astronomy Center. It is the responsibility of every student at the University of South Carolina to adhere steadfastly to truthfulness and to avoid dishonesty, fraud, or deceit of any type in connection with any academic program. Any student who violates this principle or who knowingly assists another to violate this principle shall be subject to discipline by the University. Said discipline is in addition to any grade penalty that the Instructors may impose — usually an F and reversal of all credit awarded in the semester.

**IMPORTANT DATES AND DEADLINES – SPRING 2012**

Jan 9-10	First class days. Access to the Center is restricted to ASTR 111 students. Students with no prior ASTR experience are encouraged to attend one of the orientation sessions.
Jan 11	Center opens for evaluations. Lab registration opens on the <i>ASTR website</i> .
Jan 15-16	Center closed for MLK Jr. Holiday.
Jan 25	Last day of unconstrained lab registration.
Feb 14	The number of correct responses required for mastery of Units 2-4 rises from 12 to 13.
Feb 27	DROP DAY.
March 4-9	Center closed for Spring Break. Center reopens on Sun 11 March at 5:00 PM.
March 13	The number of correct responses required for mastery of Units 5-7 rises from 12 to 13.
April 20	Last day of lab sessions. For some units a preceding day will be the last. Probably the last-day sessions filled up many days earlier.
April 23	Last day to attempt an evaluation. The Center closes for the semester at 8:00 PM. Requests for incompletes after this date will be automatically denied. You should check your progress before the center closes and report errors promptly.
April 27	Students may expect grades to be posted on VIP on or before this date.

**CELL PHONES AND OTHER ELECTRONIC GADGETS MUST BE TURNED OFF IN THE ASTRONOMY CENTER.**