AST 104 - Stars, Galaxies, and the Universe
Spring 2015 Syllabus

Professor Carl Rosenzweig  Physics Building Rm 319
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Office Hours: Tue. and Th.  5-6 or by appointment
Administrative questions (registration, add-drop etc.) contact
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Lectures: M001 Monday, Wednesday 3:45 pm - 5:05 pm Stolkin Auditorium, Physics Building
M002 Monday, Wednesday 5:15 pm - 6:35 pm Stolkin Auditorium, Physics Building
You are responsible for all material covered in lecture even if that material is not in your text.
You are responsible for all announcements made at lecture and these supersede any
information found elsewhere.


Required Course Materials,

_The Essential Cosmic Perspective_ by Bennett, Donahue, Schneider, and Voit, 7th Edition, 2015,

_Lecture Tutorials for Introductory Astronomy_, by Prather, Slater, Adams, Brissenden, We will
use the tutorials often. Bring this book to EVERY lecture.

Mastering Astronomy Access Kit (bundled with text or available for purchase online
http://www.masteringastronomy.com/  Your access from AST 101 F’14 should work.

Course Objectives

By the end of the semester, all AST 104 students should gain

1. the notion that the world is knowable, that we may learn about it through
   observations, experiments, and theory via the scientific process.
2. the notion that physical laws are universal, with the behavior of
   the largest objects in the universe governed by the behavior of
   its smallest objects, such as atoms and electrons.
3. an understanding of how we measure the mass, temperature,
   brightness, composition, distance, and motion of stars.
4. an understanding of how matter is grouped in galaxies, and of the
   evidence that most matter cannot be seen with light.
5. an understanding of how stars, galaxies, and the universe itself
   change with time, of how we know, and of what we still don't know.
6. a cosmic perspective -- an understanding of the nature and
   structure of the universe.
7. the ability to express these ideas to other people.
Many key astronomical ideas can be grasped visually, so we'll spend time looking at a variety of pictures and maps of the sky. We won't use complicated mathematics, but we will speak the language of numbers. Numbers carry a lot of the meaning in astronomy. You will also need to use a few simple formulas, and to interpret graphs. We use no mathematics above the high school math that is a prerequisite for acceptance at SU. We occasionally use a little algebra and geometry but no trigonometry or calculus.

LECTURES

Prof. Rosenzweig gives the course lectures. Attendance is required. Material will be covered in lecture that is not available elsewhere. 10-40% of each exam will be drawn from such material. Questions during lecture are welcome. You are responsible for ALL announcements made during lecture.

Careful study of the textbook is required. The lectures focus on difficult aspects of astronomy, provide structure for your out-of-class study, and demonstrate concepts we encounter. You are accountable for ALL material, concepts, and interrelationships presented in the lectures, the text, and the Lecture Tutorials. Reading assignments should be completed before class otherwise, the lectures and labs will be less useful in helping you develop a deep understanding of the subject. It is important to remember that the exams cover ALL material from the text readings even if not discussed in class.

Conceptual questions will be asked in class to assess your understanding. You will answer multiple-choice questions by holding up a folded sheet showing your choice. (a "paper clicker"). These questions are similar to those on exams, so active lecture participation will be an effective way to learn (and prepare for exams). You will be given a "paper clicker". Bring it to class each day (I suggest keeping it in your LT book)

LECTURE TUTORIALS (LT)

It is our belief that you can only learn a limited amount of information from the lectures alone, no matter how clear or entertaining. Therefore lectures are augmented by collaborative classroom activities called Lecture Tutorials (LT). The LT activities target specific ideas presented in lecture and are designed to be completed in small groups (2 to 4 students) by talking through the questions and writing a detailed, consensus response. We will use the LTs regularly in lectures. The LTs completed in class will not be submitted for grading. However the LT questions are quite similar to the questions you will find on exams. You should consider the LTs to be a critical component of your success in the course. You are strongly encouraged to discuss your solutions with your peers and not work alone on the LTs. Written solutions to the LTs will not be provided; this undermines the purpose of the LTs and turns them into just another textbook. However, you are encouraged to discuss your solutions with your peers, your TA, in physics clinic or with Prof. Rosenzweig in office hours if you would like feedback on your work. The LTs are available at the bookstore and they must be brought to every lecture.
ONLINE HOMEWORK

On-line homework will be due each week and must be submitted by early Monday morning (about 2AM) following their assignment. Thus you will have one full weekend to finish the homework. Homework will count as **100 pts** of your total grade. We are using the *Mastering Astronomy* online platform, which represents the most sophisticated on-line system for astronomy tutorials and self-study. The first homework exercise will familiarize you with the interface. The other homework will help ensure that you are keeping up with the material in the class. You should have received a Student Access Kit to Bennett et al.’s *The Essential Cosmic Perspective* with your textbook or from AST101. The Mastering Astronomy course ID for this course is

**AST104ROSENZWEIG2015**

Make sure to register with your **NET ID** code (letters before the @ in your SU email address,) when you are prompted. **If your NET ID is not entered or mistyped you will not get credit for your homework (you may get a zero for this part of the course) so BE CAREFUL.** Each assignment will be available during the week before it is due. Late homework will **not** be accepted so make sure you submit it on time.

LABORATORIES

Laboratory sections meet in historic Holden Observatory located near Crouse College. There are 8 scheduled laboratories **beginning** the week of Jan. 26. Check course calendar for the exact schedule. You will perform measurements and observations, discuss key ideas and questions, and interpret and analyze scientific evidence. Attending your regular laboratory meeting is crucial. The lab counts for **200 pts** of your total grade. **If you miss 3 or more labs you will receive a 0 for the lab portion for this course.** You will work in a team of three students, but you must write answers in your own words unless otherwise specified. Assignments must be handed in at the end of each lab. If you know you will miss your lab section in a given week, you should arrange ahead of time to attend another section: inform both your regular TA and the TA of the section that you wish to attend The TA will allow you to switch sections if you have a valid excuse (and possibly if you don't) so long as there is space in the section. It is your responsibility to make sure that your official TA receives the lab report you submit. For some laboratory exercises, calculators are recommended. There will be a make-up lab the last week of class for those who have missed a lab.

COURSE CONDUCT

You are expected to show respect for your fellow students and to help provide a good learning environment for them. Please turn off cell phones before you enter the classroom (or the lab). Please do not arrive late nor leave class early (unless you have talked to the instructors in advance and arranged to sit on an aisle). Please refrain from having side conversations that
may disturb or distract students near you. Simply put, please don't do anything that will get in
the way of your fellow students' learning.

EXAMS

There are four exams during the semester tentatively scheduled for Feb.4, Feb. 25, March 25,
and April 15. Each exam will count as 100 points. The final will be on Friday May 1 from 3
until 5 PM. It will count as two exams for 200 points. I will drop your lowest score. If the final
is your lowest score I will count it only once. THERE WILL BE NO MAKE-UP EXAMS. A missed
exam will count as 0 and as your lowest score and will be dropped. Exams count for 500 pts of
your final grade.

GRADING

Grades will be calculated based on your scores on various course activities, in the following
proportion

* Lab Exercises: maximum = 200 points
* 5 highest exam grades: maximum = 500 points
* Homework: maximum = 100 points

Maximum possible score 800

It is important that you keep track of your grades (especially in the labs) throughout the
semester. You will be able to access your up-to-date grades using Blackboard
<https://blackboard.syr.edu/webapps/login>.
Your final course grade will be determined from your total score at the end of the semester.
An A- will require 720 (90%) points and a passing grade will be 480 (60%) points.

We stress that you are not in competition with your classmates and you should help each
other; we will be very happy if everyone learns the material well enough to earn an A.

During these closed-book, close-note exams, bring a #2 pencil, sit in your assigned seat
(posted outside Stolkin). You are not allowed to wear headphones or communicate with
anyone in the classroom except for the course instructors and exam proctors. All electronics
(cell phones, calculators, etc.) must remain off and stowed at all times during exams (the
proctors will have cell phones on in case of an OrangeAlert, in accordance with University
policies).

Email policy:
The course email is AST104@listserv.syr.edu. I will check these emails at around 8PM Sunday
through Thursday and possibly at other times. Our head TA Scott Bassler may also be checking
and answering these emails.
Academic Integrity

The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it is their responsibility to learn about instructor and general academic expectations with regard to proper citation of sources in written work. The policy also governs the integrity of work submitted in exams, in laboratories, and in assignments, as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort. For more information and the complete policy, see http://academicintegrity.syr.edu

Academic Accommodation

Students who are in need of disability-related academic accommodations must register with the Office of Disability Services (ODS), 804 University Avenue, Room 309, 315-443-4498. Students with authorized disability-related accommodations should provide a current Accommodation Authorization Letter from ODS to the instructor and review those accommodations with the instructor. Accommodations, such as exam administration, are not provided retroactively; therefore, planning for accommodations as early as possible is necessary. For further information, see the ODS website, Office of Disability Services <http://disabilityservices.syr.edu/>

Syracuse University
Office of Disability Services
804 University Avenue Room 309
Syracuse, New York 13244-2330
Phone: Voice: (315) 443-4498
TOO: (315) 443-1371
E-Mail: odssched@syr.edu mailto:odssched@syr.edu

Religious Observances Policy

SU religious observances policy, found at http://supolicies.syr.edu/emp_ben/religious_observance.htm, recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice/StudentServices/Enrollment/MyReligiousObservances from the first day of class until the end of the second week of class.
Other Information

*Stars, Galaxies and the Universe* is a course in which you will be doing astronomical observations as well as some hands on experiments and measurements. You can use this course to satisfy the requirement of the liberal arts core for one laboratory science course.

Astronomy 101 is not a prerequisite; AST 101 and AST 104 can be taken independently or together in either order. Taking both AST 101 and AST 104 (in any order) fulfills the requirement of the liberal arts core for one science sequence.

To support laboratory experiments and lecture demonstrations you have been charged a course fee of $30. This fee helps pay for (i) handouts which are distributed to you, (ii) supplies, small pieces of apparatus, and maintenance for the laboratory, (iii) supplies and apparatus for lecture exercises and demonstrations, and (iv) undergraduate students working in the demonstration laboratories.