

Syllabus:

(Class Homepage <http://eevore.astro.uiuc.edu/~lwl/classes/astro122/spring06/>)

Astronomy 122: Stars and Galaxies

Instructors Info

Instructor (AD7):	Prof. Leslie Looney	Email:	lwl @ uiuc. edu
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Office Hours:	T 10:30 – 11:30 am, or by appointment		
TA (AD 1,3,5):	Jana Bilikova	Email:	jbiliko2 @ astro .uiuc .edu
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Office:		Phone:	
Office Hours:	M 3:00 – 4:00 pm, or by appointment		

If you have a question, comment, problem, or just a need to talk, feel free to use any of the office hours listed. In addition, we will make appointments for student meetings upon request.

Welcome to Astronomy!

You have chosen a great time to take this course. Astronomy is right now in a golden age, with an explosion of new images and data about the Solar System, the Galaxy, and indeed the whole Universe coming from many new ground-based and space-based telescopes. Our scientific view of the big picture—the nature of the physical universe—underwent a revolution in the 20th century, and further discoveries are on the horizon. In this course, we will get an understanding of the big astronomical picture through the development of a qualitative and quantitative understanding of the structure and evolution of the Universe. From the night sky to the earliest instants of the Big Bang, we will apply basic physical principles on grand scales to outline the major aspects of modern astrophysics, describe some of the fundamental mysteries that remain unsolved, and imply how the flood of new data will help to solve them. Indeed, we will find astrophysics to be a great symphony that interweaves the Universe.

Course Goals

My goals for a graduate of this course are that they understand our current scientific view of the Universe, conceptualize the Universe, propose what the future may hold for the field, make informed decisions about science policies, and hold any “discovery” to a personal scientific standard of proof. To realize this goal, the student should develop a broad conceptual synthesis—to “get under the hood” of the Universe and see how the cosmic machinery works. This will require a mathematical description of the Universe; thus, the lectures and assignments will feature a strong quantitative component. Indeed, we will find that a quantitative analysis is often essential to address qualitative questions, the results of which can lead to revolutions in our view of the universe.

Course Components

This course satisfies the Quantitative Reasoning II requirement.

Requirement	Percentage of Grade		Points
Class Participation Exercises (will drop some)		10%	100
Homework Assignments (best 10 out of 11)	10 x 3% each	30%	300
Night Observing Report		5%	50
One Hour Exam		20%	200
Final Exam		35%	350
Total		100%	1000

Grading

The following table shows the approximate grading scale in this course.

Grade Approximate Range

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	< 60%

Final course grades will follow these guidelines. Plusses and minuses will be used.

The ranges are approximate in that I may have to adjust them if, for example, I give an exam that is a little too hard. In any case, I will not increase the minimum cutoffs for each letter grade.

Text

Universe: Stars & Galaxies, 7th Edition, Roger Freedman & William Kaufmann III, W.H. Freeman & Co., 2004.

This book includes a CDROM and a website that contain a wealth of additional information. Additional resources include lecture notes and integrated exercises and flashcards that can help you master the material.

Class Participation

You are expected to attend lectures and discussion sections. I will cover material here that will not always be in the text, and the lecture material will be included on the exam. Discussion sections will be a time to further discuss topics in more detail, ask questions about the homework, and review for exams. Class time is the most valuable for you if you come prepared, having done the reading and ready to actively engage the material. To encourage your engagement, the lectures and discussion sections will often be punctuated by opportunities for your feedback, in the form of asking questions, "voting" on the possible outcomes of observations or demonstrations, or brainstorming answers to open-ended questions. To reward your participation in these activities, you will occasionally be asked to write down and hand in your response.

These *participation surveys* are not "quizzes" in the usual sense, in that you are not required to get all answers right. Rather, to get full credit you simply must offer a *scientifically reasonable* response. The point of this is that the survey is always an opportunity to gain points as long as you are actively engaged, even if you are still a little confused. Indeed, the most difficult and potentially confusing subjects are precisely those that most require your participation!

Although the number of these is not set, often they come upon me in a whim, we will usually have 8-15 of these a semester and 1-3 of them are dropped. This *usually* means that you can miss 1-3 surveys without penalty.

Homework

There will be 11 homework assignments given throughout the course. These are meant to sharpen your thinking on the material covered in lecture, to develop physical intuition and quantitative skills, and to help prepare you for the exams. Homework is due on Friday night of the week that it is due. Check the schedule online for specifics (<http://eeyore.astro.uiuc.edu/~lwl/classes/astro122/spring06/schedule.html>).

Homework counts for 30% of the final grade! Your best 10 homework grades will be counted. However, you are responsible for all of the material covered on all 11 homework assignments. Thus, it is to your advantage to do all 11 of the assignments, and hand them in on time.

Homework is due at the announced time (normally Friday evening for Compass assignments) listed on the assignment (posted to <http://eeyore.astro.uiuc.edu/~lwl/classes/astro122/spring06/hw.html>), after which the answers will be made available. **No late homework will be accepted.**

Observing

Nighttime Observing

Evening observing sessions will be held for several weeks at the Campus Observatory. You are required to go to one session at any of the several dates that will be posted online (<http://www.astro.uiuc.edu/classes/obs.shtml>). At the session there will be 4 stations that you can visit in any order. You may come any time during a session, but expect to stay a full hour. That means that you must leave enough time for the entire process. Do not come the last 10 mins of the session and expect to finish. Don't forget that the sessions are outside, so dress warmly. The weather is unpredictable, so go early in the semester.

Exams

Exams will be a single one-hour midterm exam and a **comprehensive** final exam. The exams will consist of short answers and essay questions. Dates are as follows.

- Hour Midterm Exam: In class Thursday, March 9th
- Final Exam: **1:30-4:30 pm Friday, May 5th**

Academic Integrity and Collaborative Work

Academic honesty is essential to this course and the University. Any instance of academic dishonesty (including but not limited to cheating, plagiarism, falsification of data, and alteration of grade) will be documented in the student's academic file. In addition, the particular exam, homework, or report will be given a zero.

Guidelines for collaborative work: Discussing course material with your classmates is in general a good idea, but each student is expected to do his or her own work. On homework, you may discuss the questions and issues behind them, but you are responsible for your own answers. In writing observing and planetarium reports, you may discuss with classmates during the activity, but again, you are must give your own answers in your own words. Finally, on exams your work and your answers must of course be your own.

For further info, see http://www2.uiuc.edu/admin_manual/code/rule_33.html.

Accessibility Statement

To insure that disability-related concerns are properly addressed from the beginning, students with disabilities who require reasonable accommodations to participate in this class are asked to see the instructor as soon as possible.

Course Schedule

Note that the lecture material may vary, but assignments are fixed. Remember to check the webpage for the most up to date schedule.

<http://eeyore.astro.uiuc.edu/~lwl/classes/astro122/spring06/schedule.html>