

Stellar and Galactic Astronomy

ASTR 1020

Spring 2022

Syllabus

- Lectures:** Monday, Wednesday, & Friday
12:40 to 1:30 pm (Period 5)
Room 202 in the Physics Building
- Instructor:** Prof. Robin Shelton
- Office Hours:** Tuesday, 2 pm - 3 pm
Thursday, 10:30am - 11:30 am
Room 306A in the Physics Building
- Textbook:** *The Cosmic Perspective: Stars, Galaxies, & Cosmology*, 9th edition
by Bennett, Donahue, Schneider, & Voit
- Website:** <https://www.physast.uga.edu/~rls/1020/>

Description:

Welcome to Astronomy 1020. For millennia, people have been looking at the stars and wondering about them. People have also wondered what the Milky Way is and whether the Universe will last forever. This course answers those and other interesting questions at an introductory level. The course begins by discussing the night sky as you see it without a telescope. It then explains how earlier generations of people tried to use their observations of the night sky in order to decipher the mysteries of the cosmos. Eventually, people realized that astronomy is intertwined with the physics of motion, light, and Einstein's relativity. These concepts will be explained at an introductory level in Astronomy 1020. We will discuss our Sun and other stars, the Milky Way galaxy in which we live, other galaxies, and the entire Universe.

Homeworks:

The best ways to learn astronomy are to attend class, read the textbook, and work out homework problems. For this reason, homework problems will be assigned on a regular basis. As a set, they will be worth 1/4 of the course grade. Everyone in the class may drop one homework score in order to deal with unexpected emergencies – your lowest homework score will be dropped automatically. If you fill in the Department of Physics and Astronomy's course evaluation form, then your second lowest homework score will also be dropped.

Homework problem sets will be assigned through UGA's LON-CAPA system. The webpage is <https://spock.physast.uga.edu/>. Log out of all other UGA accounts and then use your UGA MYID and password to log in to LON-CAPA.

Exams:

There will be 2 midterms (February 14 and March 28) and a final exam (May 11 at noon). You can bring a sheet of notes, with writing on both sides, to each exam. You can bring a calculator, but please don't program material into it. You should bring a number 2 pencil and an eraser to each exam and should arrive on time. Each midterm is worth 1/4 of the course grade. The final exam is worth 1/4 of the course grade. If you think that one of your exam problems hasn't been graded correctly, then write a paragraph explaining your logic and submit it to me within 1 week of the exam solutions being posted. I will evaluate your logic and get back to you.

Grades:

There are 4 graded components of the course grade: 1.) homework problem sets 2.) first midterm, 3.) second midterm, and 4.) final exam. Each will be weighted equally in the calculation of your course grade. Your numerical average will be converted into a course letter grade using this key: A = 91.00 to 100.00, A- = 89.00 to 90.99, B+ = 87.00 to 88.99, B = 81.00 to 86.99, B- = 79.00 to 80.99, C+ = 77.00 to 78.99, C = 71.00 to 76.99, C- = 69.00 to 70.99, D = 60.00 to 68.99, F = below 60.00

Support and Advice:

I'd be happy to talk with you during office hours about the course material, how to solve the homework problems, how to study for the exams, etc. If you find that you are struggling with the course, why don't you come in to office hours to talk about the material?

Study tips: Reading all of the textbook typically improves students' course grades by about 1 letter grade. Same for doing the homework. Taking an upper division astronomy course usually requires about 3 hours/week for attending lectures, 6 hours/week for reading the text, several hours per problem-set for working the problems, and several hours per exam for review.

Academic Honesty:

We will follow the university policies on withdrawals, incompletes, and academic honesty. By applying to UGA, students have signed a statement that says "I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others." For more information, see The *University of Georgia Bulletin* and *A Culture of Honesty*.

Revisions:

The syllabus may be revised in the future.

Day	Date	Chapter	Topic
Mon.	Jan. 10	2	Discovering the Universe for Yourself
Wed.	Jan. 12	2	Discovering the Universe for Yourself
Fri.	Jan. 14	2	Discovering the Universe for Yourself
Mon.	Jan. 17	-	<i>MLK jr Day</i>
Wed.	Jan. 19	3	Science of Astronomy
Fri.	Jan. 21	3	Science of Astronomy
Mon.	Jan. 24	3/4	Science of Astronomy / Motion, Energy, Gravity
Wed.	Jan. 26	4	Motion, Energy, Gravity
Fri.	Jan. 28	4	Motion, Energy, Gravity
Mon.	Jan. 31	5	Light & Matter
Wed.	Feb. 2	5	Light & Matter
Fri.	Feb. 4	5/S4	Light & Matter / Building Blocks of the Universe
Mon.	Feb. 7	S4	Building Blocks of the Universe
Wed.	Feb. 9	S4	Building Blocks of the Universe
Fri.	Feb. 11	2, 3, 4, 5, & S4	<i>Review (Ch 2, 3, 4, 5, S4)</i>
Mon.	Feb. 14	Ch 2, 3, 4, 5, S4	Midterm I (Ch 2, 3, 4, 5, S4)
Wed.	Feb. 16	14	Our Star (i.e., the Sun)
Fri.	Feb. 18	14	Our Star (i.e., the Sun)
Mon.	Feb. 21	14/15	Our Star (i.e., the Sun) / Surveying the Stars
Wed.	Feb. 23	15	Surveying the Stars
Fri.	Feb. 25	15	Surveying the Stars
Mon.	Feb. 28	16	Star Birth
Wed.	Mar. 2	16	Star Birth
Fri.	Mar. 4	17	Star Stuff
Mon.	Mar. 7	-	<i>Spring Break</i>
Wed.	Mar. 9	-	<i>Spring Break</i>
Fri.	Mar. 11	-	<i>Spring Break</i>
Mon.	Mar. 14	17	Star Stuff
Wed.	Mar. 16	S2	Space & Time
Fri.	Mar. 18	S2	Space & Time
Mon.	Mar. 21	S2/S3	Space & Time / Spacetime & Gravity
Wed.	Mar. 23	S3	Spacetime & Gravity
Fri.	Mar. 25	S3	Spacetime & Gravity
Mon.	Mar. 28	Ch 14, 15, 16, 17, S2, S3	Midterm II (Ch 14, 15, 16, 17, S2, S3)
Wed.	Mar. 30	18	Bizarre Stellar Graveyard
Fri.	Apr. 1	18	Bizarre Stellar Graveyard
Mon.	Apr. 4	18	Bizarre Stellar Graveyard
Wed.	Apr. 6	19	Our Galaxy
Fri.	Apr. 8	19	Our Galaxy
Mon.	Apr. 11	19	Our Galaxy
Wed.	Apr. 13	20	Galaxies
Fri.	Apr. 15	20	Galaxies
Mon.	Apr. 18	20	Galaxies
Wed.	Apr. 20	21	Galaxy Evolution
Fri.	Apr. 22	21	Galaxy Evolution
Mon.	Apr. 25	21	Galaxy Evolution
Wed.	Apr. 27	23	DM, DE, & FoU
Fri.	Apr. 29	23	DM, DE, & FoU
Mon.	May 2	23	DM, DE, & FoU
Wed.	May 11	Ch 18, 19, 20, 21, 23	Final Exam, 12:00 - 3:00pm (Ch 18, 19, 20, 21, 23)