

ASTR 1020K: Stellar and Galactic Astronomy

Spring 2018 ★ MW 5:30 pm – 6:45 pm ★ Langdale Hall 215 ★ 4CH

Instructor: Dr. Douglas R. Gies

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WWW Site: <http://www.astro.gsu.edu/~gies/ASTR1020/>

Office Hours: R 5:00 pm – 6:00 pm or by appointment (ask after class, call, or e-mail me).

Prerequisites: Completion of ASTR 1010K or equivalent.

Course Objectives: This is a survey course designed for non-specialists that completes the topics in astronomy begun in ASTR 1010K. Students will learn through lectures and reading about the processes that have formed the current universe and develop a perspective about our place and time in the universe.

Textbook: *21st Century Astronomy* (5th ed.) by Kay, Palen, & Blumenthal (2016; ISBN 978-0-393-93899-9; W. W. Norton & Co.).

Grades:

- Laboratory25%
- Assignments 30%
- Notebook 5%
- Best 2 of 3 tests20%
- Final exam20%
- Attendance bonus (5 days) [+10%]

Grading scheme:

A+:97-100%, A:93-96%, A-:90-92%, B+:87-89%, B:83-86%, B-:80-82%,
C+:77-79%, C:73-76%, C-:70-72%, D:60-69%, F:0-59%.

Laboratory:

- Labs for this class are:

#18443 Monday 7:00 pm – 8:50 pm

#18444 Tuesday 5:00 pm – 6:50 pm

#18442 Wednesday 7:00 pm – 8:50 pm

- See the lab syllabus at <http://www.astro.gsu.edu/lab/>.

- Labs begin the week of January 22 and are held in 516 Kell Hall.

- You are required to attend the same laboratory section each week.

- The lab will include one evening session for observing with telescopes.

- Lab textbook: *Activities in Astronomy: A Laboratory Textbook*, 2013 edition, by John W. Wilson.

- Bring a drawing compass, protractor, 30 cm ruler, and simple calculator.

- **A passing lab grade is required in order to pass the course.**

Assignments: I will post homework assignments on the class web site:

<http://www.astro.gsu.edu/~gies/ASTR1020/>

These will usually be due in class one week after the assignment is posted, although some assignments may take place during class. No credit will be given for late assignments.

Notebook: Purchase a 1-inch wide, 3-ring binder for a class notebook. Add dividers to make sections for the syllabus, class handouts and your notes, assignments, tests, and labs. You will present the notebook to me at the end of the semester for inspection and credit.

Tests and Exam: Because only 2 of 3 tests will be counted, there will be **no** make-up tests. All tests and the exam will be multiple choice or true/false style questions. Scan forms will be provided on the day of the exam, and please bring a pencil to enter your answers. The final exam will take place on Monday, April 30, 4:15 pm – 6:15 pm. Students are expected to do their own work and to abide by the Policy on Academic Honesty discussed in the GSU *Undergraduate Catalog*: catalog.gsu.edu/undergraduate20172018/university-academic-regulations/#academic-honesty Cheating on any test or exam will yield a zero on that work.

Attendance: Regular class attendance is highly recommended; it is usually the key to success. Attendance will be taken on five random dates during the semester, and students will be awarded two bonus points for attendance at each class for a cumulative total of a maximum of 10 bonus points that will be applied to the final grade out of 100%. **Laboratory attendance is required each week.**

Important Dates to Remember:

January 22 – Laboratory meetings begin.

February 5 – Test #1.

February 27 – Last day to withdraw and receive a grade of W.

February 28 – Test #2.

April 2 – Test #3.

April 30 – Final Exam.

Key Web Sites:

GSU Hard Labor Creek Observatory: <http://phy-astr.gsu.edu/connections/outreach/hlco/>

Fernbank Science Center and Observatory: <http://www.fernbank.edu/>

Astronomy Picture of the Day: <https://apod.nasa.gov/apod/>

Sky and Telescope Magazine: <http://www.skyandtelescope.com/>

The Evening Sky Map: <http://skymaps.com/downloads.html>

Notes:

- The table attached gives a projected schedule of topics to be covered in each class (including the relevant chapters in the textbook). Please read the text before classes.
- The course syllabus provides a general plan for the course; deviations may be necessary.
- Your constructive assessment of this course plays an indispensable role in shaping education at Georgia State. Upon completing the course, please take time to fill out the online course evaluation.
- Students who wish to request accommodation for a disability may do so by registering with the Office of Disability Services. Students may only be accommodated upon issuance by the Office of Disability Services of a signed Accommodation Plan and are responsible for providing a copy of that plan to instructors of all classes in which accommodations are sought.

Jan. 8	Introduction: scale of the Universe (1)
Jan. 10	Stars: properties (13)
Jan. 15	<i>MLK, Jr. Holiday - no class</i>
Jan. 17	Stars: H-R diagram (15)
Jan. 22	Sun: interior (14)
Jan. 24	Sun: outer layers (14)
Jan. 29	Interstellar medium (15)
Jan. 31	Star formation (15)
Feb. 5	Test #1 (1, 13 – 15)
Feb. 7	Evolution: low mass stars (16)
Feb. 12	White dwarf stars (16)
Feb. 14	Evolution: high mass stars (17)
Feb. 19	Supernovae and Neutron Stars (17)
Feb. 21	Einstein and Relativity (18)
Feb. 26	Black Holes (18)
Feb. 28	Test #2 (16 – 18)
Mar. 5	Galaxies (19)
Mar. 7	Active galactic nuclei (19)
Mar. 12	<i>Spring break - no class</i>
Mar. 14	<i>Spring break - no class</i>
Mar. 19	Milky Way Galaxy: structure (20)
Mar. 21	Milky Way Galaxy: history, center (20)
Mar. 26	Hubble's Law (21)
Mar. 28	Cosmic Microwave Background (21)
Apr. 2	Test #3 (19 – 21)
Apr. 4	Cosmology: Big Bang (22)
Apr. 9	Early Universe (22)
Apr. 11	Large Scale Structure (23)
Apr. 16	First Stars (23)
Apr. 18	Life Beyond Earth (24)
Apr. 23	Review, notebook inspection
Apr. 30	Final Exam 4:15 pm – 6:15 pm (earlier, 22 – 24)