

**Astronomy 201
Tier 2 Natural Sciences: Cosmology
(Fall 2017)**

Lectures: 11:00AM-11:50AM MWF in Steward N210

Instructor: Dr. Daniel Stark
Office: Steward 322
TA: Mr. Yujing Qin
Office: Steward 201F

Class Email: ASTRStark@as.arizona.edu

Office hours:

Dr. Stark: Wednesday 2:00-3:00pm (Steward 322)

TA Yujing Qin: Tuesday/Thursday: 11:00-12:00pm (Steward 201F) or by appointment.

Course Description

Extragalactic astronomy and cosmology are among the fastest developing fields in astronomy. This course presents cosmology as a modern, quantitative science. It describes what we know about galaxies, the large scale structure of the universe and the beginnings and evolution of the Universe.

Topics to be covered

History of Modern Cosmology
Stars and Black holes
Special and General Relativity
Gravitational Waves
The Expanding Universe
Dark Matter, Dark Energy
The Early Universe
Fate and Evolution of the Universe
Higgs Boson and Particle Physics
Quantum Gravity and Theories of Everything
Time Warps and Worm Holes

Course Email and Website:

In this class we will make regular use of D2L. It is your responsibility to check D2L regularly for course notifications / updates / and assignments.

Email: All emails regarding the course should be sent to ASTRStark@as.arizona.edu. We will aim to respond to all emails in 48 hours or less.

GRADING: Your course grade will be based on the following items:

- Homework: (drop lowest scores): 25%
- In class activities/attendance (drop lowest score): 15%
- In class tests: 40%
- Writing assignments: 20%

The class will not be curved, grades are absolute. The correspondence between final percentages and letter grades will be: A: 85%-100%, B: 70%-85%, C: 50%-70%, D: 30%-50%, E: 0%-30%.

Writing Component of ASTR 201:

There will be a variety of written assignments, both formal and informal, throughout the semester. The assignments will emphasize critical inquiry, including skills of gathering, interpreting, and evaluating information presented in popular astronomy articles and literature. Practice of various strategies, such as focusing ideas, revising, and critical reading will be integrated in the class. Assignments will be evaluated for format, organization, style, grammar, and punctuation, as well as content. One writing assignment will involve a revision process in which students receive instructor feedback on a first draft and make substantive revisions before submitting a subsequent draft for grading. The writing assignments will vary in length but will add up to a total of 10 pages over the course of the semester.

Course Objectives and Expected Learning Outcomes:

After completing ASTR 201, students should be able to think critically about the scientific process and communicate and use scientific information effectively. These key learning outcomes will be met through a variety of in-class activities and assignments throughout the semester. These include solving basic astronomy problems through analytic reasoning (both in-class and in homework assignments), and evaluating evidence and assessing the ambiguities and assumptions in popular astronomy writing. Communication skills will be stressed through formal and informal written assignments and in-class interpretation of information in varied formats (graphs, charts). Homework and written assignments will require students to access and evaluate the reliability of information from the internet and popular science articles.

Absence and Class Participation Policy:

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>.

Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <https://deanofstudents.arizona.edu/absences>

Participating in the course and attending lectures and other course events are vital to the learning process. Students who miss class due to illness or emergency are required to bring documentation from their health-care provider or other relevant, professional third parties. Failure to submit third-party documentation will result in unexcused absences.

TEXTBOOK: For this course we will use "21st Century Astronomy, 5th Edition," by Kay, Palen, & Blumenthal. You are only required to purchase the "Stars and Galaxies" split, available in the bookstore. We will also use the book "A Briefer History of Time" by Stephen Hawking, a popular introduction to the cosmology.

TEST DATES: There will be TWO in-class tests during the semester. No makeup tests without a prior approved Dean's excuse. They will be held on the following days:

- Friday, September 22

- **Wednesday, October 25.**

The final exam will be held on the following date in the normal lecture hall, Steward N210:

- **Wednesday, December 13, 10:30AM-12:30PM.**

Course Conduct and Expectations

Please come to class ready to learn and engage with your peers. Student participation is an integral part of the course. In order to ensure a productive learning environment for all students, please note the following rules:

1. No cellphones in class. They must be kept in a bag or pocket and on silent. Students using cell phones will be asked to leave class.
2. Laptops / tablets must only be used for note taking.
3. No class disruptions (talking, etc.)
4. Follow the University of Arizona Code of Academic Integrity

Failure to abide by these rules will lead to a warning from the instructor or TA. If disruptive behavior continues, students will be asked to leave class for the remainder of the period. The instructor will follow the university guidelines on disruptive behavior for any further infractions: <http://policy.arizona.edu/education-and-student-affairs/disruptive-behavior-instructional-setting>

Students with Disabilities:

If you anticipate barriers related to the format or requirements of this course, please meet with me so that we can discuss ways to ensure your full participation in the course. If you determine that disability-related accommodations are necessary, please register with Disability Resources (621-3268; <https://drc.arizona.edu/>) and notify me of your eligibility for reasonable accommodations. We can then plan how best to coordinate your accommodations.

Code of conduct: Students are expected to understand and follow the Student Code of Conduct, which is available at <https://deanofstudents.arizona.edu/policies-codes>.

