

Department of Astronomy and Planetary Science

Introduction to Astronomy

General Information

- Department: Astronomy and Planetary Science
- Course: AST 180 (Introduction to Astronomy) – Class Number 1575 Section 001
- Term: Fall 2019
- Total Units Of Course Credit: 3
- Pre- and Co-Requisite(s): None
- Mode of Instruction: Face-to-Face
- Meeting Time: T,TH 12:45 – 2:00 p.m.
- Location: Biological Sciences Room 265

- Instructor: Stephen Tegler
- Phone: 928-523-9382; Email: Stephen.Tegler@nau.edu
- Tegler's Office address: Physical Sciences (Bldg. 19) 225D
- Tegler's Office hours: T 2:15 – 3:15 p.m. and TH 10:30 – 11:30 a.m.
- Teaching Assistant – Megan Gialluca
 - Physical Sciences (Bldg. 19) Rm 202: T 11:30-12:30, TH 4:00 – 5:00 p.m.

Course Purpose:

AST 180 surveys the observable Universe. Core topics include the scale of the Universe, the celestial sphere, lunar and solar eclipses, phases of the Moon, origin of modern astronomy, light and telescopes, atoms and spectra, the life cycle of stars, white dwarfs, neutron stars, black holes, the Milky Way, structure of galaxies, Big Bang cosmology, and origin and evolution of the Solar System.

The course meets a 3-hour liberal studies science requirement. It also meets the lab-science requirement when taken together with the 1-credit-hour lab, AST 181. Essential liberal studies skills that are addressed include the logic of scientific inquiry, quantitative and spatial reasoning, critical reading and thinking, technology and its impact, and environmental consciousness.

Student Learning Outcomes:

- Know enough basic facts in astronomy, and have sufficiently developed your ability to apply the logic of scientific inquiry, to be able to *critically* read an article on astronomy in news outlets.
- Use your knowledge of the Solar System and spatial reasoning to know where to look in the sky to find the Moon, planets, and constellations.
- Use conceptual and quantitative reasoning to be able to solve various problems, and be able to interpret the results.

- Use astronomical concepts and critical thinking skills to describe, using specific examples, not only our geometric place in the universe but also our evolutionary place, and how our understanding of that place has changed with changing technology.

Assignments/Course Structure/Approach

Students are required to read assigned chapters before class. During class, the professor will emphasize important material, and in-class activities will assess comprehension of important material and help prepare students for homework and examinations. Students are required to observe once at the 0.5-meter Barry Lutz Telescope.

Assessment Methods for Student Learning Outcomes

Low-Stakes Assessments:

- In-Class Activities
- Observation at Barry Lutz Telescope
- Online Homework

High-Stakes Assignments:

- Two Multiple Choice Examinations
- Comprehensive Multiple Choice Final Examination

Grading

Percentages Toward Final Grade:

- In-Class Activities: ~25%
- Observation at Barry Lutz Telescope: ~ 5%
- Homework: ~25%
- Two Examinations: ~20%
- Final Examination: ~25%

Examination Dates:

- Examination 1: Tuesday, October 15
- Examination 2: Thursday, November 21
- Final Examination: Tuesday, December 10, 2019, 12:30 – 2:30 p.m.

Approximate Grading Scale:

- >90% A
- >80% B
- >70% C
- >60% D

In-class activities, online homework, and examination scores are kept up to date in TopHat. It is the student's responsibility to frequently check their scores in TopHat for accuracy. Any score in question must be discussed with me within one week of the due date. After one week, I will not entertain any challenges to the scores in TopHat

Makeup Work:

A student must obtain permission in advance of a regularly scheduled examination in order to take a make-up examination. Make up examinations will consist of essay and short answer questions, not multiple-choice questions. All make-up examinations will be given near the end of the semester. There will be no makeup in-class activities or homework assignments. An institutional excuse is required to be excused from a in-class assignment or an online homework assignment.

Textbook and Required Materials:

You are required to purchase TopHat (www.tophat.com) which is the platform we will use to access (1) the online textbook, (2) in-class activities, and (3) online homework. You can visit <https://success.tophat.com/s/article/Student-Top-Hat-Overview-and-Getting-Started-Guide> for information on how to register as well as how to get up and running in TopHat. A subscription to TopHat costs \$20 for 4 months, \$30 for 1 year, and \$60 for 4 years. There are no other costs for AST 180.

Tutorial Assistance

Help will be available through office hours held by the FYLI TA and the professor.

Academic Dishonesty:

A finding of academic dishonesty will result in a zero for the assignment and a record of the student's offense in NAU Academic Dishonesty Database. A repeat of a finding of academic dishonesty will result in a failing grade for the class.

Course Outline:

- Ch. 1 – Distant Galaxies
- Ch. 2 – Night Sky
- Ch. 3 – International Space Station
- Ch. 4 – Southern Summer
- Ch. 5 – Our Sun In Ultraviolet Light
- Ch. 6 – Hubble Space Telescope

Examination 1

- Ch.17– Star Colors
- Ch.18 – Variety of Stars
- Ch.19 – Celestial Distance
- Ch.20 – Interstellar Matter
- Ch. 21 – Star and Planet Formation
- Ch. 22 – Lifecycle of Stars I
- Ch. 23 – Lifecycle of Stars II
- Ch. 24 – Gravity, Relativity, Blackholes

Examination 2

- Ch. 25 – Our Galaxy
- Ch. 26 – Other Galaxies
- Ch. 27 – Quasars
- Ch. 28 – Colliding Galaxies
- Ch. 29 – History of Our Universe
- Ch. 30 – Astrobiology

Comprehensive Final Examination

University and Course Policies:

Safe Environment Policy: NAU's Safe Working and Learning Environment Policy prohibits discrimination and promotes the safety of all individuals within the University. The goal of this policy is to prevent the occurrence of discrimination on the basis of sex, race, color, age, national origin, religion, sexual orientation, disability, or veteran status and to prevent sexual harassment, sexual assault or retaliation by anyone at this University.

Students With Disabilities: If you have a documented disability, you can arrange for accommodations by contacting Disability Resources (DR) at 523-8773 (voice) or 523-6906 (TTY), dr@nau.edu (e-mail) or 928-523-8747 (fax). Students needing academic accommodations are required to register with DR and provide required disability related documentation. Although you may request an accommodation at any time, in order for DR to best meet your individual needs, you are urged to register and submit necessary documentation (www.nau.edu/dr) 8 weeks prior to the time you wish to receive accommodations. DR is strongly committed to the needs of student with disabilities and the promotion of Universal Design. Concerns or questions related to the accessibility of programs and facilities at NAU may be brought to the attention of DR or the Office of Affirmative Action and Equal Opportunity (523-3312).

Academic Integrity: The university takes an extremely serious view of violations of academic integrity. As members of the academic community, NAU's administration, faculty, staff and students are dedicated to promoting an atmosphere of honesty and are committed to maintaining the academic integrity essential to the education process. Inherent in this commitment is the belief that academic dishonesty in all forms violates the basic principles of integrity and impedes learning. Students are therefore responsible for conducting themselves in an academically honest manner.

Individual students and faculty members are responsible for identifying instances of academic dishonesty. Faculty members then recommend penalties to the department chair or college dean in keeping with the severity of the violation. The complete policy on academic integrity is in Appendix G of NAU's Student Handbook <http://www4.nau.edu/stulife/handbookdishonesty.htm>.

Academic Contact Hour Policy: The Arizona Board of Regents Academic Contact Hour Policy (ABOR Handbook, 2-206, Academic Credit) states: "an hour of work is the equivalent of 50 minutes of class time...at least 15 contact hours of recitation, lecture, discussion, testing or evaluation, seminar, or colloquium as well as a minimum of 30 hours of student homework is required for each unit of credit."

The reasonable interpretation of this policy is that for every credit hour, a student should expect, on average, to do a minimum of two additional hours of work per week; e.g., preparation, homework, studying.

Sickness or Hospitalization: Northern Arizona University has an official authorized absence policy that is administered by the Office of Student Life. Institutional excuses can be issued to authorize absences. If a student is hospitalized or has been directed by a physician to remain confined to his or her place of residence because of illness, Fronske Health Center staff or private physicians may issue a statement providing the dates of the student's confinement.