

Department of Astronomy and Planetary Science

Introduction to Astronomy

General Information

- Department: Astronomy and Planetary Science
- Course: AST 180 (Introduction to Astronomy) – Class Number 3033 Section 001
- Term: Spring 2024
- Total Units Of Course Credit: 3
- Pre- and Co-Requisite(s): None
- Mode of Instruction: In Person
- Location: Wettaw Building, Room 130
- Meeting Time: T,TH 4:00 – 5:15 p.m.
- Instructor: Stephen Tegler
- Phone: 928-523-9382; Email: Stephen.Tegler@nau.edu

Help with AST 180

- Stephen Tegler's Office Location and Hours: Physical Sciences (Building 19) Room 225D; T, TH 2:30 – 3:30 p.m. or by Appointment
- Jarod Despain's Office Location and Hours: Physical Sciences (Building 19) Room 225; W 10:00 – 11:00 a.m. and TH 11:00 a.m. – 12:00 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, the origin of modern astronomy, light and telescopes, atoms and spectra, the life cycle of stars, white dwarfs, neutron stars, black holes, the Milky Way, the 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 *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 solve various problems and 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.

Grading

Percentages Toward Final Grade:

- In-Class Activities: ~40%
- Homework: ~60%

Approximate Grading Scale:

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

In-class activities and homework scores are kept up to date in TopHat. It is the student's responsibility to check their scores in TopHat for accuracy frequently. 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.

Late Assignments and Makeup Work:

Late assignments will not be accepted. There will be no makeups for in-class activities or homework assignments. An institutional excuse is required to be excused from an in-class assignment or homework assignment.

Textbook and Required Materials:

There are no required textbooks or materials to buy for this course. We will use TopHat (www.tophat.com) to access (1) the online textbook, (2) in-class activities, and (3) online homework.

Tutorial Assistance

Help will be available through the professor's office hours.

Career Ready Resources.

LinkedIn:

CEFNS Career Development

www.linkedin.com/in/cefns-career-development-072715233

NAU Career Development

<https://www.linkedin.com/company/nau-career-development/>

Handshake:

<https://nau.joinhandshake.com/login>

Udemy: Online courses and career searching advice

<https://in.nau.edu/its/udemy/>

Log in with your NAU email account and search 'NAU Career Steps'

O*net Online: Occupation exploration reports

<https://www.onetonline.org/>

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

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

Ch. 25 – Our Galaxy

Ch. 26 – Other Galaxies

Ch. 27 – Quasars

Ch. 28 – Colliding Galaxies

Ch. 29 – History of Our Universe

Ch. 30 – Astrobiology

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.

SYLLABUS POLICY STATEMENTS

ACADEMIC INTEGRITY

NAU expects every student to firmly adhere to a strong ethical code of academic integrity in all their scholarly pursuits. The primary attributes of academic integrity are honesty, trustworthiness, fairness, and responsibility. As a student, you are expected to submit original work while giving proper credit to other people's ideas or contributions. Acting with academic integrity means completing your assignments independently while truthfully acknowledging all sources of information, or collaboration with others when appropriate. When you submit your work, you are implicitly declaring that the work is your own. Academic integrity is expected not only during formal coursework, but in all your relationships or interactions that are connected to the educational enterprise. All forms of academic deceit such as plagiarism, cheating, collusion, falsification or fabrication of results or records, permitting your work to be submitted by another, or inappropriately recycling your own work from one class to another, constitute academic misconduct that may result in serious disciplinary consequences. All students and faculty members are responsible for reporting suspected instances of academic misconduct. All students are encouraged to complete NAU's online academic integrity workshop available in the E-Learning Center and should review the full Academic Integrity policy available at <https://policy.nau.edu/policy/policy.aspx?num=100601>.

ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) technologies bring both opportunities and challenges. Ensuring honesty in academic work creates a culture of integrity and expectations of ethical behavior. The use of these technologies can depend on the instructional setting, varying by faculty member, program, course, and assignment. Please refer to course policies, any additional course-specific guidelines in the syllabus, or communicate with the instructor to understand expectations. NAU recognizes the role that these technologies will play in the current and future careers of our graduates and expects students to practice responsible and ethical use of AI technologies to assist with learning within the confines of course policies.

COPYRIGHT INFRINGEMENT

All lectures and course materials, including but not limited to exams, quizzes, study outlines, and similar materials are protected by copyright. These materials may not be shared, uploaded, distributed, reproduced, or publicly displayed without the express written permission of NAU. Sharing materials on websites such as Course Hero, Chegg, or related websites is considered copyright infringement subject to United States Copyright Law and a violation of NAU Student Code of Conduct. For additional information on ABOR policies relating to course materials, please refer to ABOR Policy 6-908 A(2)(5).

COURSE TIME COMMITMENT

Pursuant to Arizona Board of Regents guidance (ABOR Policy 2-224, Academic Credit), each unit of credit requires a minimum of 45 hours of work by students, including but not limited to, class time, preparation, homework, and studying. For example, for a 3-credit course a student should expect to work at least 8.5 hours each week in a 16-week session and a minimum of 33 hours per week for a 3-credit course in a 4-week session.

DISRUPTIVE BEHAVIOR

Membership in NAU's academic community entails a special obligation to maintain class environments that are conducive to learning, whether instruction is taking place in the classroom, a laboratory or clinical setting, during course-related fieldwork, or online. Students have the obligation to engage in the educational process in a manner that does not interfere with normal class activities or violate the rights of others. Instructors have the authority and responsibility to address disruptive behavior that interferes with student learning, which can include the involuntary

withdrawal of a student from a course with a grade of “W”. For additional information, see NAU’s Disruptive Behavior in an Instructional Setting policy at <https://nau.edu/university-policy-library/disruptive-behavior>.

NONDISCRIMINATION AND ANTI-HARASSMENT

NAU prohibits discrimination and harassment based on sex, gender, gender identity, race, color, age, national origin, religion, sexual orientation, disability, veteran status and genetic information. Certain consensual amorous or sexual relationships between faculty and students are also prohibited as set forth in the Consensual Romantic and Sexual Relationships policy. The Equity and Access Office (EAO) responds to complaints regarding discrimination and harassment that fall under NAU’s Nondiscrimination and Anti- Harassment policy. EAO also assists with religious accommodations. For additional information about nondiscrimination or anti-harassment or to file a complaint, contact EAO located in Old Main (building 10), Room 113, PO Box 4083, Flagstaff, AZ 86011, or by phone at 928-523-3312 (TTY: 928-523-1006), fax at 928-523-9977, email at equityandaccess@nau.edu, or visit the EAO website at <https://nau.edu/equity-and-access>.

TITLE IX

Title IX of the Education Amendments of 1972, as amended, protects individuals from discrimination based on sex in any educational program or activity operated by recipients of federal financial assistance. In accordance with Title IX, Northern Arizona University prohibits discrimination based on sex or gender in all its programs or activities. Sex discrimination includes sexual harassment, sexual assault, relationship violence, and stalking. NAU does not discriminate on the basis of sex in the education programs or activities that it operates, including in admission and employment. NAU is committed to providing an environment free from discrimination based on sex or gender and provides a number of supportive measures that assist students, faculty, and staff.

One may direct inquiries concerning the application of Title IX to either or both the Title IX Coordinator or the U.S. Department of Education, Assistant Secretary, Office of Civil Rights. You may contact the Title IX Coordinator in the Office for the Resolution of Sexual Misconduct by phone at 928-523-5434, by fax at 928-523-0640, or by email at titleix@nau.edu. In furtherance of its Title IX obligations, NAU promptly will investigate or equitably resolve all reports of sex or gender-based discrimination, harassment, or sexual misconduct and will eliminate any hostile environment as defined by law. The Office for the Resolution of Sexual Misconduct (ORSM): Title IX Institutional Compliance, Prevention & Response addresses matters that fall under the university’s Sexual Misconduct policy. Additional important information and related resources, including how to request immediate help or confidential support following an act of sexual violence, is available at <https://in.nau.edu/title-ix>.

ACCESSIBILITY

Professional disability specialists are available at Disability Resources to facilitate a range of academic support services and accommodations for students with disabilities. If you have a documented disability, you can request assistance by contacting Disability Resources at 928-523-8773 (voice), 928-523-8747 (fax), or dr@nau.edu (e-mail). Once eligibility has been determined, students register with Disability Resources every semester to activate their approved accommodations. Although a student may request an accommodation at any time, it is best to initiate the application process at least four weeks before a student wishes to receive an accommodation. Students may begin the accommodation process by submitting a self-identification form online at <https://nau.edu/disability-resources/student-eligibility-process> or by contacting Disability Resources. The Director of Disability Resources, Jamie Axelrod, serves as NAU’s Americans with Disabilities Act Coordinator and Section 504 Compliance Officer. He can be reached at jamie.axelrod@nau.edu.

RESPONSIBLE CONDUCT OF RESEARCH

Students who engage in research at NAU must receive appropriate Responsible Conduct of Research (RCR) training. This instruction is designed to help ensure proper awareness and application of well-established professional norms and ethical principles related to the performance of all scientific research activities. More information regarding RCR training is available at <https://nau.edu/research/compliance/research-integrity>.

MISCONDUCT IN RESEARCH

As noted, NAU expects every student to firmly adhere to a strong code of academic integrity in all their scholarly pursuits. This includes avoiding fabrication, falsification, or plagiarism when conducting research or reporting

research results. Engaging in research misconduct may result in serious disciplinary consequences. Students must also report any suspected or actual instances of research misconduct of which they become aware. Allegations of research misconduct should be reported to your instructor or the University's Research Integrity Officer, Dr. David Faguy, who can be reached at david.faguy@nau.edu or 928-523-6117. More information about misconduct in research is available at <https://nau.edu/university-policy-library/misconduct-in-research>.

SENSITIVE COURSE MATERIALS

University education aims to expand student understanding and awareness. Thus, it necessarily involves engagement with a wide range of information, ideas, and creative representations. In their college studies, students can expect to encounter and to critically appraise materials that may differ from and perhaps challenge familiar understandings, ideas, and beliefs. Students are encouraged to discuss these matters with faculty.

Last revised November 28, 2023