

Department of Astronomy and Planetary Science

Introduction to Astronomy

General Information

- Department: Astronomy and Planetary Science
- Course: AST 180 (Introduction to Astronomy) – Class Number 2294 Section 001
- Term: Spring 2025
- Total Units Of Course Credit: 3
- Pre- and Co-Requisite(s): None
- Mode of Instruction: In Person
- Location: Liberal Arts, Room 120
- Meeting Time: T,TH 4:00 – 5:15 p.m.
- Instructor: Stephen Tegler
- Phone: 928-523-9382; Email: Stephen.Tegler@nau.edu
- Teaching Assistant: Emily Clark
- Email: erc328@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
- Emily Clark's Office Location and Hours: Physical Sciences (Building 19), Room 225; M, W 2:30 – 3:30 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 and the lab science requirement with the 1-credit-hour lab, AST 181. Essential liberal studies skills 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 problems and interpret the results.
- Using astronomical concepts and critical thinking skills, describe, using specific examples, our geometric and evolutionary place in the universe and 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. I will emphasize important material during class, and in-class activities will assess comprehension of important material and help prepare students for homework.

Grading

Percentages Toward Final Grade:

- In-Class Activities: ~30%
- Homework: ~70%

Approximate Grading Scale:

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

TopHat keeps up-to-date scores for in-class activities and homework. It is the students' responsibility to check their scores for accuracy frequently. **If a score is in question, it must be discussed with me within one week of the due date.** After one week, I will not consider challenging the scores in TopHat.

Late Assignments and Makeup Work:

Late assignments will not be accepted, and makeups for in-class activities and homework assignments will not be allowed. An institutional excuse is required to be excused from an in-class or homework assignment. To accommodate events beyond your control, e.g., catching a bad case of COVID and missing a week of class, there will be at least two extra credit assignments to make up for missed work.

Textbook and Required Materials:

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

Tutorial Assistance

Help will be available through the professor's and teaching assistant'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://www9.nau.edu/policies/Client/Details/1443?whoIsLooking=Students&pertainsTo=All>

ARTIFICIAL INTELLIGENCE

This course (or assignment) allows for the use of generative artificial intelligence (AI) technologies as part of the research and preparation phase of the work; for example, using these technologies to assist with research, generating ideas, creating summaries of topics, and developing drafts of text that are then used as an input to the work students do to generate a final assignment. In this use, students should be aware of the potential limitations of using generative AI as a tool for learning and research, since information is not always reliable or accurate, and should critically evaluate the sources, methods, and outputs of generative AI systems.

Any final work submitted by students that contributes toward the course grade is expected to be generated by the students themselves, working individually or in groups as directed by class assignment instructions. Submitting final work created by generative AI constitutes an academic integrity violation. If you have any questions about this policy or if you are unsure whether a particular use of generative AI is acceptable, please ask for clarification before using such technologies.

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. To report a concern related to possible unlawful discrimination or harassment or to request a time to meet, please use the [Report an Issue Form](#). To file a complaint, please submit the online [Complaint Form](#). EAO also assists with religious accommodations. To request a religious accommodation, please use the [Religious Accommodation Request Intake Form](#). EAO additionally provides access to lactation spaces, and please use to the [Lactation Space Request Form](#) to request use of a location. For additional information about nondiscrimination or anti-harassment, contact EAO at EquityandAccess@nau.edu, or visit the EAO website at <https://nau.edu/equity-and-access>. The EAO is located in Old Main on the first floor.

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 employees, and covered guests.

One may direct inquiries concerning the application of Title IX to either or both the university Title IX Coordinator or the U.S. Department of Education, Assistant Secretary, Office of Civil Rights. You may contact NAU's Title IX Coordinator at titleix@nau.edu or by phone at 928-523-5434. In furtherance of its Title IX obligations, NAU promptly will investigate or equitably resolve all reports of sex/gender-based discrimination, harassment, or sexual misconduct and will eliminate any hostile environment as defined by law. To submit a report, please use the [File a Report Form](#). 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](#). ORSM also facilitates reasonable modifications for pregnant or parenting individuals. Additional important information and related resources, including how to request help or confidential support following conduct covered by the Sexual Misconduct Policy, is available on the [ORSM web site](#), and you also may contact the office at titleix@nau.edu. The ORSM is located in Gammage on the third floor.

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, Scott Pryor, who can be reached at scott.pryor@nau.edu or 928-523-5927. 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 August 5, 2024