



College of the Environment, Forestry,
and Natural Sciences



Syllabus

Course: AST 181: Introduction to Observational Astronomy
Department: Astronomy and Planetary Science
Prerequisite or Corequisite: AST 180 or AST 180H
Term: Fall 2020
Section(s) & Day(s): AST 181-001 (Monday), AST 181-002 (Tuesday)
Meeting Time: 7:30 PM to 10:00 PM
Mode of Instruction: NAUFlex/TBA
Meeting Location: bbCollaborate and/or Zoom (TBA)
Number of Course Credit(s): 1

Lab Instructor: Colin Orion Chandler
Pronouns: he/him/his
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Office Location: Zoom (room TBA)
Office Hours: TBA & by appointment

Required Materials

A pen/pencil, tablet, or other device suitable for sketching things like the phase of the moon or constellations in the sky. A digital camera (like on your phone, tablet, or computer) or a scanner (like those in the Cline Library) if you wish to print pages to work on; for example, you might prefer sketching the phase of the moon on paper, then submit that sketch through bbLearn.

Course Description

This one-hour course serves as an introduction to observational astronomy. We will be concentrating on the night sky and the use of the 0.5 m Barry Lutz Telescope (BLT) telescope when conditions permit (as in, the sky is clear); otherwise we will focus on exploring the motions of astronomical objects and other key concepts. When paired with the three-hour lecture course, Astronomy 180, the pair of courses meets the four-hour laboratory science component for liberal studies. The thematic focus of this course is Technology and its Impact,

since we will be examining how the use of telescopes changes the way we see the sky. The skills we will be concentrating on are the use of technology, specifically that of the telescopes and/or computers; the logic of scientific inquiry, which is at the heart of each laboratory exercise; quantitative reasoning as developed during your analysis of your observations; and spatial reasoning as developed during studies of the celestial sphere and the motions of the sun and planets.

Course Objectives

After successful completion of this course, you will be able to:

- (a) Point out the basic stars and constellations in the night sky.
- (b) Use a telescope to examine planets and other bright objects.
- (c) Sketch the daily and annual motions of the sun and other astronomical objects.
- (d) Use a variety of computer programs to illustrate basic astronomical concepts.
- (e) Use the method of scientific inquiry to explain observational phenomena.

Course Structure

Instruction for this course will be carried out entirely online. This semester we have a special opportunity to make use of the 0.5 meter Barry Lutz Telescope (BLT) research class telescope. This will enable you to get a better feel for modern observational astronomy while at the same time maintaining safety. Some labs will ask you to go outside and interact with the night sky, such as for sketching the moon or constellations. Some labs are due the same night they are assigned, while other labs may require more time to complete (such as to see all of the phases of the moon) and so will not be due until later; your lab instructor will make these expectations clear for each lab. Your lab instructor will set up a way to inform you of the night's scheduled lab, whether indoors or outdoors, based on sky conditions.

Lab ordering

Previous versions of this course required students to purchase a lab manual with numbered labs. Instead, this semester we will provide you with the labs online as needed. The nature of astronomy means that we are at the mercy of the weather, so the labs may appear out of order from what your friends in other lab sections are doing.

Lab Reports

Virtually all lab projects will involve lab reports. Some of these may be filled out entirely in bbLearn, while others will ask you to submit your report electronically. *Don't panic!* For this course all lab reports come with templates in one form or another. Ideally the lab reports should be turned in at the end of the lab period; however, if you need extra time, you may turn them in as late as 5:00 p.m. on the Friday following that lab project; just check with your instructor. There will be some lab assignments given as take-home projects; these are to be completed outside of class and turned in as directed.

Quizzes

Typically, there will be a weekly quiz on the material covered in the previous week's lab. Each quiz will consist of one or two short essay questions on the most important concepts.

Final Exam

The final exam will have questions very similar to those on the quizzes. The final will be given during finals week. Because of the fluid situation caused by COVID-19, please refer to the NAU finals schedule for the exact date and time.

Grading System

Lab Reports	60%
Weekly Quizzes	20%
Final Exam	20%

COVID-19 REQUIREMENTS AND INFORMATION

The following statements in red set forth in this document's first section are specific to NAU's response to the COVID-19 situation. The requirements outlined below are mandatory until further notice. They are based upon current public health conditions and guidance and may change as circumstances warrant or new information becomes available. Additional information about the University's response to COVID-19 is available from the **Jacks are Back!** web page located at <https://nau.edu/jacks-are-back/lumberjack-responsibilities>.

FACE COVERING AND PHYSICAL DISTANCING REQUIREMENTS

Appropriate face masks or other suitable face coverings must be worn by all individuals when present in classrooms, laboratories, studios, and other dedicated educational spaces. To maximize the benefits of physical distancing as an important strategy to help reduce community transmission of the SARS-CoV-2 virus, instructors may implement mandatory student seating arrangements or specific seat assignments. Instructors may remove students who do not cooperate with these requirements from the instructional space in the absence of an approved accommodation arranged through Disability Resources. Failing to comply with these requirements may constitute a violation of the university's *Disruptive Behavior in an Instructional Setting* policy available at <https://nau.edu/university-policy-library/disruptive-behavior>.

USE NAUFLEX TO HELP MAINTAIN PHYSICAL DISTANCING

NAUFlex (available at <https://nau.edu/nauflex/student>) is designed to help all students actively participate in their coursework during the required day and time of a course when they are not physically present in the classroom. This course design model allows students to be fully engaged with faculty and peers and receive the high-quality educational experience for which NAU is known.

CLASS SESSION RECORDINGS FOR STUDENTS AND FACULTY USE ONLY

Certain class sessions may be audio or video recorded to help reinforce live instruction during the COVID-19 pandemic. These recordings are for the sole use of the instructor and students enrolled in the course. Recordings will be stored in approved, accessible repositories. By enrolling, students agree to have their image and classroom statements recorded for this purpose, to respect the privacy of their fellow students, and university-owned intellectual property (including, but not limited to, all course materials) by not sharing recordings from their courses. Questions regarding restrictions on the use of classroom audio or video recordings may be addressed to the appropriate academic unit administrator.

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>.

COURSE TIME COMMITMENT

Pursuant to Arizona Board of Regents guidance (ABOR Policy 2-224 – *Academic Credit*), for every unit of credit, a student should expect, on average, to do a minimum of three hours of work per week, including but not limited to class time, preparation, homework, and studying.

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, or veteran status. Due to potentially unethical consequences, certain consensual amorous or sexual relationships between faculty and students are also prohibited. The Equity and Access Office (EAO) responds to complaints regarding discrimination and harassment that fall under NAU's *Safe Working and Learning Environment* (SWALE) policy. EAO also assists with religious accommodations. For additional information about SWALE 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 via the EAO website at <https://nau.edu/equity-and-access>.

TITLE IX

Title IX is the primary federal law that prohibits discrimination on the basis of sex or gender in educational programs or activities. Sex discrimination for this purpose includes sexual harassment, sexual assault or relationship violence, and stalking (including cyber-stalking). Title IX requires that universities appoint a "Title IX Coordinator" to monitor the institution's compliance with this important civil rights law. NAU's Title IX Coordinator is Elyce C. Morris. The Title IX Coordinator is available to meet with any student to discuss any Title IX issue or concern. You may contact the Title IX Coordinator by phone at 928-523-3515, by fax at 928-523-0640, or by email at elyce.morris@nau.edu. In furtherance of its Title IX obligations, NAU will promptly investigate and equitably resolve all reports of sex or gender-based discrimination, harassment,

or sexual misconduct and will eliminate any hostile environment as defined by law. Additional important information about Title IX and related student 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), 928-523-6906 (TTY), 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.