

Astronomy 1103 Lab Syllabus

Fall 2025

Instructor: Anirban Bhattacharjee

Office: WSB317 — **Email:** axb14ku@sulross.edu — **Office Hours:** By appointment

Ph No: 3073997657

Course Description:

ASTRO 1103 is an introductory lab course for non-science majors. It provides a broad introduction to Astronomy including: (1) daily, monthly and yearly patterns in the sky; (2) basic physics of gravity, light, and atoms; (3) formation of the solar system; (4) stars and stellar evolution; (5) galaxies, cosmology, and the evolution of the Universe; and (6) the fundamental tenets of science and the scientific process. The goal of this course is to cover most of the areas of modern astronomy at a level which requires only basic mathematics.

Resources:**Required:**

Labs will be uploaded on to Blackboard and needs to be printed out by the student before showing up to the lab.

Course Objectives:

We will follow the guidelines set forth by the American Astronomical Society, the National Science Education Standards, the American Association for the Advancement of Science, and the in-class survey. The goals for this class are as follows:

- Appreciate the scientific process, how it works, the notion that physical laws are universal, the elements of scientific theories, what they do and do not tell us.
- Develop familiarity with the night sky and how its appearance changes with time and position on Earth.
- Describe how data is collected from astronomical objects, and what quantities can be measured/inferred.
- Understand basic - yet crucial - physical laws, and the processes that govern astronomical quantities.
- Integrate concepts from related subjects to explain relationships (e.g., physics and math) between astronomical quantities.
- Infer the nature, structure and evolution of the Universe, and objects therein.

Instructional Philosophy of the Course:

The overarching goals of this course are for you to understand the nature of science through the eyes of astronomy; to understand the big ideas in astronomy; and to develop a lifelong interest in astronomy and current events surrounding astronomy. To meet these three goals, the course instructors have carefully designed a sequence of learning tasks and assessment procedures as outlined below.

*-In order to nurture a collaborative and productive environment, I will insist that **all cell phones, PDAs, blackberrys, etc.** be **turned off** during the class. Communication with the outside world during class will be considered disruptive and disrespectful to the rest of the students (and could also be considered cheating – see **Academic Honesty**). Anyone caught using any of these devices during class will be asked to **leave**.*

*–Attendance at all classes is Mandatory **Missing more than 3 labs will result in an Automatic F***

Assessment and Grading:

In order to promote an active and collaborative learning environment, there will be no curve to assess grades. Each student will only be competing against themselves, and will be responsible for gaining the declarative knowledge and conceptual understanding for performance.

Grading Scheme	
Total Points	Grade
90–100	A
80–89.999...	B
70–79.999...	C
60–69.999...	D
below 59.999...	F

From the total points, letter grades will be assigned according to the table on the right. There will be no plus or minus grades assigned.

Students with disabilities: If you require any special accommodations to participate in the class or complete assignments, please contact the instructor as soon as possible.

Academic Honesty:

University Student Conduct and Discipline defines Academic Dishonesty:

”The University expects all students to engage in all academic pursuits in a manner that is beyond reproach and to maintain complete honesty and integrity in the academic experiences both in and out of their classroom. The University may initiate disciplinary proceedings against a student accused of any form of academic dishonesty, including but not limited to, cheating on an examination or other academic work, plagiarism, collusion, and the abuse of resource materials. 1. Cheating includes:

- a. Copying from another students test paper, laboratory report, other report, or computer files, data listings, and/or programs, or allowing another student to copy from same.
- b. Using, during a test, materials not authorized by the person giving the test.
- c. Collaborating, without authorization, with another person during an examination or in preparing academic work.
- d. Knowingly, and without authorization, using, buying, selling, stealing, transporting, soliciting, copying, or possessing, in whole or in part, the contents of an unadministered test.
- e. Substituting for another student; permitting any other person, or otherwise assisting any other person to substitute for oneself or for another student in the taking of an examination or test or the preparation of academic work to be submitted for academic credit.

- f. Bribing another person to obtain an unadministered test or information about an unadministered test.
- g. Purchasing, or otherwise acquiring and submitting as one's own work any research paper or other writing assignment prepared by an individual or firm. This section does not apply to the typing of the rough and/or final versions of an assignment by a professional typist.
- h. "Plagiarism" means the appropriation and the unacknowledged incorporation of another's work or idea in one's own written work offered for credit.
- i. "Collusion" means the unauthorized collaboration with another person in preparing written work offered for credit.
- j. "Abuse of resource materials" means the mutilation, destruction, concealment, theft or alteration of materials provided to assist students in the mastery of course materials.
- k. "Academic work" means the preparation of an essay, dissertation, thesis, report, problem, assignment, or other project that the student submits as a course requirement or for a grade.

Procedures for discipline due to academic dishonesty shall be the same as in other disciplinary actions, except that all academic dishonesty cases shall be first considered and reviewed by the faculty member. If, after reviewing the case, the faculty member believes that disciplinary action is necessary, he/she may recommend a penalty but must notify the student of his/her right to appeal to the academic department chair and, eventually, to the dean before imposition of the penalty. If the student does not accept the decision of the academic department chair or dean, the student may then follow the normal disciplinary procedures. No disciplinary action shall become effective against the student until the student has received substantive and procedural due process except as provided under Interim Disciplinary Action.

In addition, during the course of the semester, each student will be asked to carry out exercises in collaboration with other students. To nurture such an environment, we will consider any disruptive or disrespectful acts (such as talking on a cell phone, or texting during class) to be a form of cheating. We consider academic dishonesty to be a serious offense and the maximum punishments allowed will be pursued in all scenarios. This includes completing any quizzes, or scantron forms with the help of another student or for scantron forms completed by another student who is not you. If similar work is submitted, all parties involved will receive a zero for their assignment. Make your work your own, be original.

AI Policy :

The University does not recommend or endorse any specific AI tools or resources. Students should be aware that many generative AI tools (e.g., ChatGPT, Google Gemini, Microsoft Copilot) store user input and may use this data to train future models. For this reason, students

should never upload or share personal, confidential, or identifiable information—such as names, ID numbers, health data, or assignment submissions containing such details—into any generative AI platform. When using AI tools, students should verify whether the tool complies with student privacy standards as indicated by the University. Faculty may recommend specific tools that better align with institutional data privacy policies, but ultimate responsibility for data protection rests with users. Students are encouraged to use faculty-recommended platforms when engaging in coursework involving generative AI. The University is not liable for any adverse experience or impact when students interact with these tools.

This course assumes that work submitted by students will be generated by the students themselves, working individually or in groups as directed by class assignment instructions. This policy indicates the following constitute violations of academic honesty: a student has another person/entity do the work of any substantive portion of a graded assignment for them, which includes purchasing work from a company, hiring a person or company to complete an assignment or exam, and/or using generative AI tools (such as ChatGPT). In this course, every element of class assignments must be fully prepared by the student. The use of generative AI tools for any part of your work will be treated as plagiarism. If you have questions, please contact me. All assignments should be fully prepared by the student. Developing strong competencies in the skills associated with this course, from student-based brainstorming to project development, will prepare you for success in your degree pathway and, ultimately, a competitive career. Therefore, the use of generative AI tools to complete any aspect of assignments for this course are not permitted and will be treated as plagiarism. If you have questions about what constitutes a violation of this statement, please contact me.

The emergence of generative AI tools (such as ChatGPT and DALL-E) has sparked interest among many students in our discipline. The use of these tools for brainstorming ideas, exploring possible responses to questions or problems, and creative engagement with the materials may be useful for you as you craft responses to class assignments. While there is no substitute for working directly with your instructor, the potential for generative AI tools to provide automatic feedback, assistive technology and language assistance is clearly developing. Please feel free to reach out to me well in advance of the due date of assignments for which you may be using generative AI tools and I will be happy to discuss what is acceptable.

In this course, students shall give credit to AI tools whenever used, even if only to generate ideas rather than usable text or illustrations. When using AI tools on assignments, add an appendix showing (a) the entire exchange, highlighting the most relevant sections; (b) a description of precisely which AI tools were used (e.g. ChatGPT private subscription version or DALL-E free version), (c) an explanation of how the AI tools were used (e.g. to generate ideas, turns of phrase, elements of text, long stretches of text, lines of argument, pieces of evidence, maps of the conceptual territory, illustrations of key concepts, etc.); (d) an account of why AI tools were used (e.g. to save time, to surmount writer's block, to stimulate thinking, to handle mounting stress, to clarify prose, to translate text, to experiment for fun, etc.). Students shall not use AI tools during in-class

examinations, or assignments unless explicitly permitted and instructed. Overall, AI tools should be used wisely and reflectively with an aim to deepen understanding of subject matter.

It is a violation of university policy to misrepresent work that you submit or exchange with your instructor by characterizing it as your own, such as submitting responses to assignments that do not acknowledge the use of generative AI tools. Please feel free to reach out to me with any questions you may have about the use of generative AI tools before submitting any content that has been substantially informed by these tools.

Lab Schedule

Week 1	Introduction, Syllabus, and Review
Week 2	Scales and Ratios
Week 3	Celestial Sphere
Week 4	Kepler's Law
Week 5	Spectrum
Week 6	Atoms and Telescopes
Week 7	Solar System
Week 8	Jupiters moon
Week 9	Greenhouse Effect
Week 11	Extrasolar Planets
Week 12	Parallax Lab
Week 13	Milky Way