

ASTR 101 Syllabus

Principles of Astronomy | Spring 2026

Dr. Anna Rosen

Course Information

Instructor	Dr. Anna Rosen
Email	alrosen@sdsu.edu
Office	Physics 239
Office Hours	Friday 11 am - 1 pm (and by appointment)
Class meetings	Mon/Wed/Fri 10:00–10:50 am
Location	LH 345
Course website	https://astrobytes-edu.github.io/astr101-sp26
Platforms	Canvas (<i>announcements, homework, gradebook</i>) iClicker (<i>in-class engagement</i>)

Start Here

- **Homework:** Submit on Canvas (two-stage: solutions Monday, grade memo Wednesday)
- **Reading:** Lecture readings provided on course website
- **In class:** Bring iClicker; most Fridays include an in-class group activity
- **Exams:** Closed-note, calculator allowed, formula sheet provided
- **Questions?** Check Canvas and course website announcements, then [office hours](#)

Course Description

Discover the universe: planets, stars, galaxies, and our place in the cosmos. This course builds a **foundational understanding of modern astronomy** — from how stars shine and die, to the Big Bang and the large-scale structure of the universe. Along the way, we'll explore black holes, dark matter, dark energy, nebulae, and other exotic objects.

Satisfies the Physical Science [5A] General Education requirement.

Required Materials

- **Lecture readings and slides:** Provided on the [course website](#) under each module — no textbook purchase required.
- **Optional reference:** OpenStax *Astronomy 2e* — free online at openstax.org/details/books/astronomy-2e

- **iClicker:** Required for in-class engagement. Register at <https://student.iclicker.com/>
- **Calculator:** Non-smartphone calculator for exams.

Student Learning Outcomes

By the end of this course, students will be able to:

1. Interpret light as information — Use color, brightness, and spectra to infer basic properties of astronomical objects (temperature, composition, motion) and explain the physical reasoning behind each inference.
2. Explain and predict sky phenomena — Describe the causes of day/night, seasons, lunar phases, and eclipses using Sun–Earth–Moon geometry and Earth’s axial tilt, supported by clear diagrams.
3. Apply physical principles to motion — Use gravity, inertia, and conservation laws to explain orbital motion and gravitational interactions, with simple scaling arguments to justify conclusions.
4. Reason quantitatively across scales — Work confidently with units, scientific notation, graphs, and proportional reasoning to interpret astronomical sizes, distances, times, and energies.
5. Connect stellar properties to physics — Relate a star’s mass, color, luminosity, and lifetime to each other and to the underlying physics, and trace the major stages of stellar evolution from birth to remnant.
6. Describe how planets beyond our solar system are detected — Explain the basic principles behind methods like transits and radial velocity, and recognize what these observations can reveal about distant planetary systems.
7. Describe cosmic structure and history — Explain the evidence for galaxies, cosmic expansion, and the Big Bang framework, including why dark matter and dark energy are inferred from observations.
8. Evaluate astronomical claims critically — Distinguish observation from interpretation, identify assumptions and sources of uncertainty, and apply course concepts to assess misinformation and science-in-society issues.

Grading & Assessments

Component	Weight
Astronomy Media Reflections	5%
Weekly Homework + Grade Memos	15%
Scholarly Engagement (iClicker + in-class activities)	15%
Module Exam 1	15%
Module Exam 2	15%
Final Exam (cumulative)	35%

Important Dates

- **Module 1 Exam:** Monday, March 2 (Observing the Sky, Light & Spectra)
- **Module 2 Exam:** Monday, April 20 (Stars, Stellar Evolution, Exoplanets)
- **Final Exam:** Friday, May 8, 10:30 AM – 12:30 PM (Comprehensive)

See the [Course Schedule](#) for the full weekly calendar.

Grading scale

The instructor may, at their discretion, curve the exam grades and final course grades. These percentages represent guaranteed thresholds — earning the stated percentage guarantees at least that grade. The instructor reserves the right to adjust borderline grades upward based on effort, improvement, and engagement. [Click here for SDSU's explanation of grades.](#)

Letter grade	Percent range	Explanation
A	93–100%	Outstanding
A-	90–92%	
B+	87–89%	
B	83–86%	Praiseworthy
B-	80–82%	
C+	77–79%	Average
C	73–76%	
C-	70–72%	
D+	67–69%	
D	63–66%	Minimally Passing
D-	60–62%	
F	Below 60%	Failure

Course Components

Per SDSU policy, students are expected to spend at least 6 hours per week (a minimum of 2 hours per course credit hour/unit) on coursework outside of class, including reading, homework, and exam preparation for this 3-unit course. [Click here for SDSU's explanation of Credit Hour or Unit.](#)

In this section:

- [Astronomy Media Reflections](#)
- [Scholarly Engagement](#)
- [Weekly Homework + Grade Memos](#)
- [Exams](#)

Astronomy Media Reflections (5%)

Throughout the semester, you'll watch or listen to astronomy media — documentaries, YouTube videos, podcasts — and write brief reflections connecting what you learned to course concepts.

Details:

- ~5 assignments spread across the semester
- **Short responses** (2–3 paragraphs or Canvas discussion post)
- **Graded on completion and effort** — honest engagement, not “right answers”
- Specific media will be assigned; you may also propose your own with instructor approval

Why this matters: Astronomy is everywhere — in the news, in popular science, in culture. This component helps you practice recognizing course concepts “in the wild” and evaluating how science is communicated to the public.

Scholarly Engagement (15%)

Scholarly engagement measures how you make your reasoning visible through class participation and observable learning behaviors. Engagement is assessed through **iClicker responses** and **weekly observable behaviors**.

Score	Observable Behaviors
5/5	Prepared (specific questions on readings/notes), engaged in iClicker + activities, contributes to discussion, helps peers reason through problems, uses evidence/units/assumptions in explanations
4/5	Prepared, steady effort in activities, contributes occasionally, collaborates respectfully, asks questions when stuck
3/5	Inconsistent preparation, participates when prompted, limited collaboration/discussion contribution
2/5	Frequently unprepared or disengaged, minimal contribution to activities, distracts self/others
1/5	Rare attendance/engagement, unprepared when present, does not participate in activities
0/5	Habitual absence, no engagement

This rubric is a guideline — your overall scholarly contribution matters more than conforming to a single engagement style.

Attendance is not formally taken, but you cannot earn engagement credit if you are not present and participating.

Classroom norms: Phones and off-task devices are not permitted during class. Be punctual. Treat classmates and the instructor with respect, and actively contribute to our learning community.

Weekly Homework + Grade Memos (15%)

Homework develops quantitative proficiency and reasoning skills. Problems emphasize **units, assumptions, and physical interpretation** — not just final numerical answers. The primary purpose is exam readiness through consistent, meaningful practice.

Two-Stage Submission Workflow:

1. **Stage 1 — Solutions** (*Due Monday 11:59 PM PT*)

- Submit **one readable PDF** via Canvas (not photo compilations)
- Show your work clearly: calculations, reasoning, labeled answers
- No late submissions; solutions posted Tuesday morning
- **Lowest homework score dropped** (handles emergencies)

2. **Stage 2 — Grade Memo** (*Due Wednesday 11:59 PM PT*)

- Complete the Grade Memo using the rubric and posted solutions
- Document what succeeded and why
- Identify what failed and pinpoint where errors occurred
- Reflect on learning gains and adjustments for future work
- Include: per-problem self-ratings (1–5) with explanations and AI/collaboration disclosure

Instructor Grading Scale (0–5):

Score	Criteria
5	Thorough, clear solutions with shown steps/units; insightful self-assessment; pinpointed corrections and concrete habit adjustments; complete disclosures
4	Solid work with minor gaps; genuine reflection evident
3	Acceptable but uneven; missing reasoning in places; shallow reflection
2	Limited/weak: incomplete solutions or missing memo components
1	Minimal engagement
0	Not submitted, missing disclosures, or integrity breach

Why 2-stage grading? Visible reasoning + honest reflection + improvement over time are the pathways to exam readiness. Correctness is one factor among several.

Exams (65% total)

There are two module exams (15% each) and one **cumulative** final exam (35%). Exams are **closed-note and closed-book**. You may use a **calculator** (no phones/smartwatches). A **course formula sheet** will be provided with the exam.

Missed Exams

There are **no make-up exams** in this course. The only exception is a **serious, documented emergency** (e.g., hospitalization or a verified family emergency). In that case, a make-up may be offered **only at the instructor’s discretion** and may use a **different format** than the original exam. Travel, work obligations, scheduling conflicts, technical issues, or forgetting an exam do **not** qualify. An unexcused absence earns a **zero**.

Final exam note: SDSU’s policy states that **no final exam may be given to individual students before the regular scheduled time**; if it is impossible to take the final as scheduled, arrangements must be made with the instructor (typically via an **Incomplete/deferred final** process or **withdrawal** from the course, when applicable). ([Spring 2026 Final Exam Calendar](#))

Academic Integrity & AI Policy

All submitted work must reflect **your own understanding**. Collaboration is encouraged for discussing concepts, but what you submit must represent your own reasoning and understanding. Violations will be handled according to [university procedures](#).

Course-Provided AI Tools (Approved)

Approved AI Tools

ASTR 101 NotebookLM — A private notebook grounded in course materials only (invitation via email). Use for reviewing concepts, clarifying lecture content, and studying — not for generating solutions to submit.

External AI Tools (Not Allowed for Graded Work)

External AI Rules

Do not use ChatGPT, Gemini, Claude, or similar tools to produce, rewrite, or “polish” anything you submit. These tools can generate fluent explanations that are subtly wrong — and in a physical science course, “sounds right” isn’t a standard of truth.

Allowed for studying:

- Clarifying your own notes or assigned readings
- Generating practice questions (not answers to assigned problems)
- Explaining concepts at a different level

Not allowed:

- Generating or rewriting homework solutions you submit
- Submitting reasoning you cannot reproduce on your own

Course Materials (Sharing Policy)

Lecture notes, slides, homework assignments, and exams are the intellectual property of the instructor. You may use course materials for your own educational purposes in this course, but you may not reproduce, distribute, share, or post them on any public platform (e.g., Chegg, Course Hero, Discord servers, public GitHub repos) without written permission.

Unauthorized recording or redistribution of class sessions or office hours is prohibited.

Communication & Getting Help

All course-related communication should be sent through Canvas messaging when possible. Include “ASTR 101” in the subject line. I aim to respond within 24-48 hours on weekdays. **Before emailing, check this syllabus and recent Canvas announcements.**

If you encounter difficulties with the assignments or find yourself falling behind, please seek help immediately by:

- Posting your questions on the course *Canvas* discussion page.
- Speaking with the instructor during class or office hours (preferred).
- Collaborating with classmates (while ensuring your final submission reflects your own understanding).
- Attending SDSU's *Astronomy Help Room* for free tutoring (schedule posted on Canvas).

Getting Help (Office Hours)

Office hours are for learning — bring what you've tried (notes, attempts, questions) and we'll work from there. I'll often guide you by asking questions so you build your own problem-solving skills. You're welcome to come even if you're not sure what to ask or have non-course related questions.

Fostering a Growth Mindset

A **growth mindset** is the belief that intelligence, abilities, and talents are malleable and can be developed through effort and persistence, not fixed traits you're born with. This mindset is key for succeeding in this course. In ASTR 101, you'll encounter challenging concepts that may initially seem overwhelming. **This is normal and expected: it means you're learning.**

Trust the process, embrace the challenge, and discover that you're capable of doing hard things.

Diversity and Inclusivity Statement

I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability, and other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

Essential Student Information

For essential information about student academic success, please see the [SDSU Student Academic Success Handbook](#).

SDSU provides disability-related accommodations via Student Disability Services: <https://sds.sdsu.edu> (email: sds@sdsu.edu). Please allow 10–14 business days for processing.

Class rosters are provided to the instructor with the student's legal name. Please let the instructor know if you prefer an alternate name and/or gender pronoun.

If you need to be absent from class for a religious observance, please notify me in writing during the first two weeks of the semester so that we can make any necessary arrangements.

Land Acknowledgement

San Diego State University sits on Kumeyaay land. The Kumeyaay people have lived in this region for over 10,000 years and continue to live here today.

Your Responsibility

This syllabus constitutes our course contract. You are responsible for reading and understanding all policies stated here.