Advanced Astronomy for High Schoolers

Major Units & Weekly Topics for Academic Year 2025-26

Live Class	Week	Part	Topic	Reading	Lab Project
Sept 10	1	Getting Started	Ch 1 Modern View of the Universe	p. 1-20	Build Scale Models
Sept 17	2	Part 1: Developing Perspective	Ch 2 Discovering the Universe *	p.24-49	Telescope Resolution
Sept 24	3		Ch 3 Science of Astronomy †	p. 53-80	Measuring the Earth
Oct 1	4		S1 Celestial Timekeeping ‡	p. 84-104	Navigation Lab
Oct 8	5	Part 2: Key Astronomy Concepts	Ch 4 Making Sense of the Universe *	p.110-132	Stellar Temperature
Oct 15	6		Ch 5 Light & Matter‡	p.137-161	Spectrometer
Oct 22	7		Ch 6 Telescopes †	p.165-186	Build a Telescope
Oct 29	8	Part 3: Learning from Other Worlds	Ch 7 Our Planetary System‡	p.192-213	Mission to Mars
Nov 5	9		Ch 8 Formation of the Solar System*	p.217-233	Radiometric Dating
Nov 12	10		Ch 9 Planetary Geology‡	p.237-272	Crater Impact Lab
Nov 19	11		Ch 10 Planetary Atmospheres †	p.276-314	Atmosphere Lab
Nov 26	12		Ch 11 Jovian Planet Systems ‡	p.318-346	Jovian Moons
Jan 7	13		Ch 12 Asteroids, Comets, Dwarf Planets	p.350-378	Asteroid Analysis
Jan 14	14		Ch 13 Exoplanets †	p.381-404	Exoplanet Detection
Jan 21	15	Part 4: A Deeper Look at Nature	S2 Space & Time‡	p.410-428	Lorentz Lab
Jan 28	16		S3 Spacetime & Gravity*	p.432-451	Time Dilation Lab
Feb 4	17		S4 Building Blocks of the Universe	p.455-470	Stargazing Lab
Feb 11	18	Part 5: Stars	Ch 14 Our Star‡	p.476-494	Solar Activity Lab
Feb 18	19		Ch 15 Surveying the Stars †	p.498-518	Stellar Mass & Temp
Feb 25	20		Ch 16 Star Birth*	p.522-539	Infrared Orion
Mar 4	21		Ch 17 Star Stuff‡	p.543-562	HR Diagram Lab
Mar 11	22		Ch 18 Bizarre Stellar Graveyard	p.565-582	Gravitational Lensing
Mar 18	23	Part 6: Galaxies and Beyond	Ch 19 Our Galaxy †	p.588-610	Galaxy Structure
Apr 1	24		Ch 20 Galaxies & Modern Cosmology*	p.614-634	Variable Stars
Apr 8	25		Ch 21 Galaxy Evolution‡	p.637-654	Galaxy Color Lab
Apr 15	26		Ch 22 Birth of the Universe †	p.658-676	Redshifting Galaxies
Apr 22	27		Ch 23 Fate of the Universe	p.680-702	Astronomer Spotlight
Apr 29	28	Part 7: Life	Ch 24 Life in the Universe*	p.708-734	Exoplanet Habitability
May 6, 13	29-30	Capstone Project			

**Astronomer Spotlight Poster Due (7 total)*

† *Stargazing Week (self-paced students adjust date to new moon week)*

‡ *Optional Discovery Project*

👀 This symbol † is called a *dagger*—it's often used for footnotes or to mark something special in academic writing. A *double dagger* (‡) is used after the dagger has been used to avoid confusion when indicating a footnote or reference.

Advanced Astronomy for High Schoolers *is a fun, inspiring, and academically challenging astronomy course created especially for advanced students who are ready for something beyond the usual science class. It's based on the kind of course you'd find in college— redesigned by astronomers and scientists to be exciting, hands-on, and accessible for teens.*

Weekly Routine: How to Stay on Track in this Astronomy Course

To succeed in this course, it's important to build good habits. Here's your step-by-step guide so you always know what to do and not fall behind. Don't rush and don't cram, use this plan as a guide and do a little bit every day!

Before Class (preferably 1-2 days before)

- **Read the assigned textbook pages** for in-class discussion, taking notes as you go
- **Listen to the weekly astronomy podcast** of your choice
- **Fill out your Podcast Passport** a quick journal reflection to record what you learned

File these in your **Notes & Reading** and **Podcast Passport** binder sections.

During the Class Lesson

- **Come prepared** to discuss what you read, and bring your questions and insights!
- **Take notes during the main lesson.** Class time is focused on the most important ideas, challenging concepts, and math examples—not a full review of the textbook. You will need to read the assigned pages ahead of time to follow along and get the most out of the lesson.
- This course is designed to help you *think like a scientist*, not just copy facts—so active preparation is part of the learning process!

File these in your **Notes & Reading** section

Immediately Following the Class Lesson

- **Work through the assigned questions** (at the end of each textbook chapter)
- You can write your answers, talk through them with a friend, or for self-checking your understanding of the material.

File these in your **Notes & Reading** section

Next Day (after class) – Start Homework

- Go over the **math concepts** for this week's topic. Rewrite your notes so it's clear to you.
- **Begin your homework problems**. Skip any that are challenging or you're not sure how to start.

File these under **Homework & Quizzes**

Continue to work on Assignments Every Day (until finished)

- **Finish your homework assignment**. Ask for help if you're stuck—you're not alone!
- Spend time reviewing key terms, concepts, and formulas for the quiz.

File your completed work under **Homework & Quizzes**

Be part of our class!
Scan for details:

The Day Before Class: Quiz + Assignments Due

- **Turn in your homework** before the end of the day.
- Take the assigned **short quiz** to check your understanding of the week's material.
- Work on your **Astronomer Spotlight or assigned lab projects**

File your project notes and data in **Labs & Projects**. File quizzes under **Homework & Quizzes**

Tips for Success

- Set aside **30–60 minutes a day** for astronomy reading and assignments outside of class time.
- Use your **binder dividers** to keep everything organized—we're going to be doing a lot together!