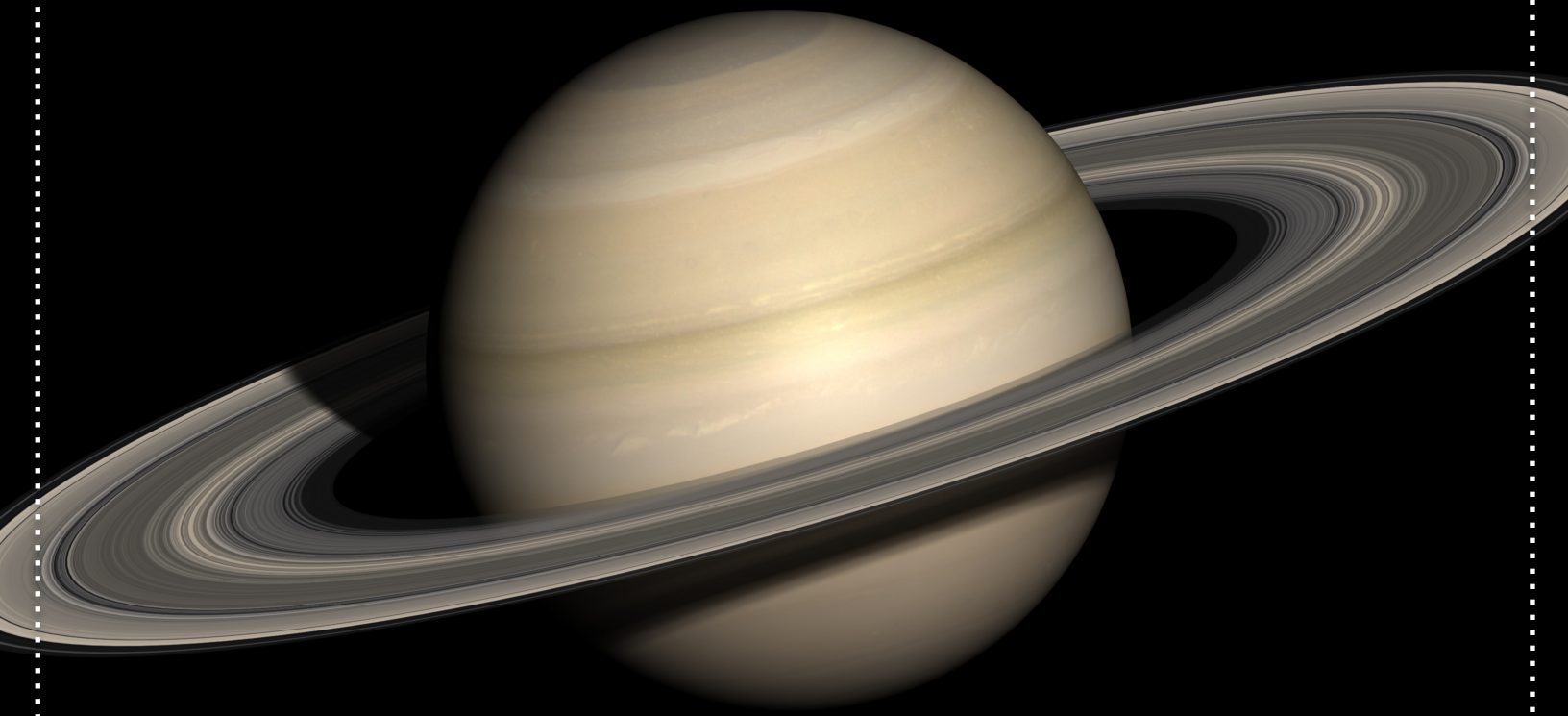
EXPERIENCE
ASTRONOMY



Group Facilitator
GUIDE

EXPERIENCE ASTRONOMY
GROUP FACILITATOR GUIDE

Welcome to Experience Astronomy

Dear Group Facilitator,

This short guide will give you all the information you need to run each class smoothly and successfully. I believe you'll find it both easy to implement and a rich educational experience for your students.

Nothing quite excites students about an academic subject like an infectiously excited teacher. You might say I am an astronomy geek, and one of my goals as a teacher is to help others get as "geeked" about astronomy as I am .

But I can't do it alone. Your co-op or educational group can play a vital role when it comes to inspiring kids to love astronomy. While I've tried to make this course as easy to use in a group setting as possible—even for a novice astronomer—in the end, the main difference between a good course and a *great* course will be your own attitude as a facilitator.

So, I encourage you: *learn right along with your students*. Drink in the information and engage with the material. Even do some of the outdoor assignments yourself as time permits. Resist the urge to merely press play and sit back.

Most of all, let this course revitalize your reverence for "the Father of heavenly lights" (James 1:17). The heavens declare the glory of God (Psalm 19:1), so let your growing knowledge of the heavens inspire you to look up a little more often and stand in awe of the Holy One (Isiah 40:25-26).

Luke Gilkerson

Getting Started

Signing into the Online Course

This is how you and your student can sign in to the online course.

1. Go to ExperienceAstronomy.com
2. Click on the top menu item My Courses
3. Enter the correct username and password

The first time you sign in…

1. Click on "Start a Course!"
2. Click "Experience Astronomy (For Groups)."
3. Click "Start Taking This Course"

Every time after this, when you sign in, Experience Astronomy will be listed as an active course. Simply Click "Experience Astronomy (For Groups)" after signing in and you will come to the online classroom.

Before Your First Class

When you signed your students up for Experience Astronomy, you created usernames and passwords for all of them. Make sure to send that information to each of your students and/or student's parents, instructing each of them how to sign into the course (using the same instructions you used above).

Once signed into the course, students should download the *Experience Astronomy Field Guide*, provided at the top of the course page. This will be used for the outdoor observation assignments every week. Alternatively, you or their parent's may choose to purchase a softcover spiral bound field guide in our store.

How the Course Works

What Each Lesson Involves

Each time you meet for class, you should do the following…

1. Collect and/or hand back the *Field Guide* assignment from the week prior
2. Administer the lesson's quiz (about 5-10 minutes long), and then grade the lesson's quiz in class (less than 5 minutes long)
3. Watch the video lesson together (about 20 minutes long)
4. Explain the observation assignment for that week using the online planetarium from neave.com
5. Assign the weekly recommended reading for students to do at home. All the readings are from *Signs & Seasons: Understanding the Elements of Classical Astronomy,*

Each step is explained in detail below.

Grade Field Guide Assignment

There are *two ways* to handle the grading of the Field Guide assignments.

1. *Recommended*: Students hand in the assignment at the beginning of class where it is promptly graded by an assistant and handed back at the end of class. This is ideal because it gives students immediate feedback on their observation assignments and because it lightens the load for you, the facilitator.
2. Students can simply hand in the assignment and you hand it back to them graded the next week.

As a facilitator, you should have been emailed a *Field Guide Answer Key* which provides you with some direction on the accuracy of what the students are doing for most assignments.

We recommend using a simple grading system for the assignments:

- 3 points: student completed the assignment and it looks generally accurate
- 2 points: student completed the assignment but there are several problems
- 1 point: student's work looks generally inaccurate or just "made up"
- 0 points: student did none of the assignment

Record each student's grade in your own records. If you notice a student is consistently getting 0s and 1s on their assignments for several weeks in a row, it will be important to pull that student aside so see how you can help.

In the event of a bad-weather week, all or most students will have blank assignments. This is okay. Most assignments can be postponed a week or two. This will mean certain weeks students are doubling up on assignments. In the event bad weather simply does't let up for several weeks, have students complete their observation assignments using the neave.com planetarium instead of the outdoor sky.

You will be the best gauge of whether students are really encountering bad weather or whether they are simply using reports of cloudy skies as an excuse. We recommend setting an alarm for yourself each day of the week when students should be outside and then glancing outside to check visibility. (For instance, if the assignment calls for students to be outside at 11pm one day that week, take a brief look outside each day at 11pm to see what visibility is like.)

Administer the Quiz

There are 3 options you have for administering the quiz depending on what you believe works best for your students and class situation.

At the beginning of each class, give students the quiz that corresponds to the previous week's lesson. You may even allow students to use their notes during the quiz if you choose.

Have students grade the quizzes in class. You can have students trade papers and grade one another or have students grade their own. Once a grade is written on the top of each quiz, collect the quizzes and record the grades for your own records later.

As a second alternative, you could have the students complete and correct the quizzes right after watching the video lesson each week.

Your third option is to give students their quizzes at the end of each class to take home or send parents the quizzes electronically. Parents can then proctor the quizzes. If your time is limited, this option will allow you a few extra minutes in class for discussion.

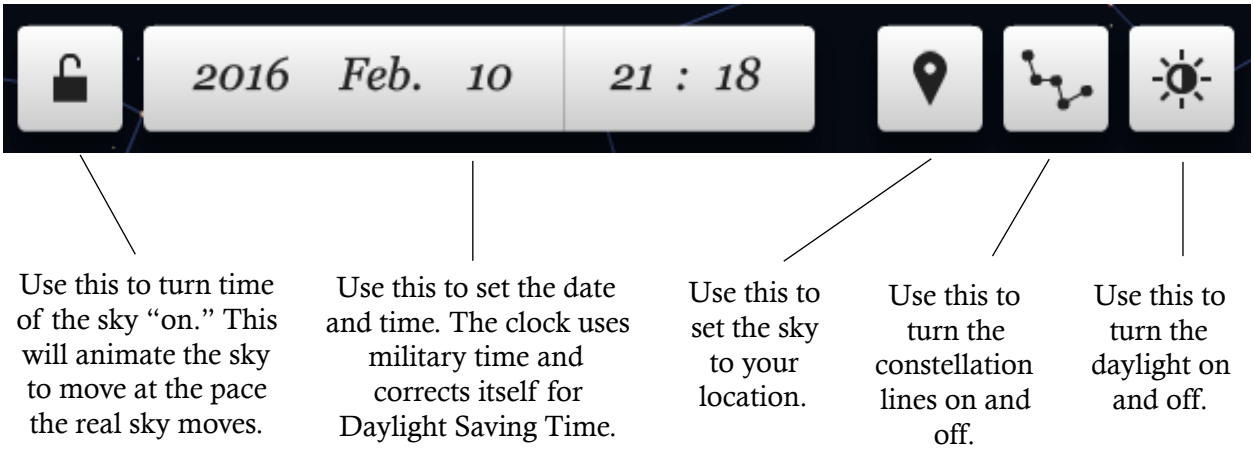
Play Video Lesson

The videos are pretty self-explanatory. Make sure you have an adequate screen or projector so all students can see the videos. Make sure students can hear the audio. Encourage students to take notes during the videos.

Explain the Upcoming Outdoor Assignment

In order to prepare students for the upcoming assignment for the week, it is recommended you use the planetarium on neave.com. This website allows you to reproduce the sky on your computer screen for any location on Earth, date, and time of day or night.

- First, set the sky to your location.
- Next, set the date and time to the correct day for observing.
- Then, make sure the constellation patterns are turned on.



Again, encourage students to take notes as you show them how to find the sky objects they will need to draw under the real sky.

- Some assignments require students to draw specific constellations. Simply show the students where those constellations are and what they look like. (By hovering over the stars on the screen, you'll see what each star is called and what constellation it is in.)
- Some assignments require students to draw the meridian. The meridian is the imaginary line that divides the sky into east-west halves. Simply find the spot on the horizon labeled "South," then go straight up until you come to the + symbol directly above you—this is called the "zenith," the point straight over an observer's head. The line between due south and the zenith, continuing on

to due north, is the meridian. Point out where the meridian is in relation to the constellations students need to draw.

- Some assignments will require students to do some computations. You can choose to do those computations in class together if you wish.
- Some assignments require students to find planets. Planets will be in different regions of the sky from month to month, so have your class investigate which planets are visible. Use the directions in the *Field Guide* to help you do this. (Hint: Planets are always visible inside zodiac constellations. There are 12 zodiac constellations: Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpius, Sagittarius, Capricornus, Aquarius, Pisces.)
- Some assignments require you to use the "Sky at a glance" feature on the website of *Sky and Telescope*. Simply go to the website and find an activity that looks suitable for your students and if possible, show them on neave.com how to locate what they need to find.

Assign the Reading

Weekly readings are from the textbook *Signs & Seasons*. Simply assign the pages listed for each lesson listed in the Recommended Reading section of this guide. Reading assignments are optional for the Basic program, but required for the Advanced program.

Recommended Reading

It is highly recommended students obtain a copy of *Signs & Seasons: Understanding the Elements of Classical Astronomy*. While none of the quizzes or exams will be based on material exclusively in the textbook, the book will help to reinforce what is learned in the lectures (especially for those students who learn best by reading). Reading assignments are optional for the Basic program, but required for the Advanced program.

Below are the assigned readings in order. If students need a reminder, the online portal lists the recommended reading for each lesson, but the assignments are also listed for you as a handy reference.

- Lesson 1: p.1-8
- Lesson 2: p.9-27
- Lesson 3: p.126-128
- Lesson 4: p.29-32, 119-120
- Lesson 5: p.36-53
- Lesson 6: p.145-150
- Lesson 7: none
- Lesson 8: none
- Lesson 9: p.129-131
- Lesson 10: p.71-79
- Lesson 11: p.80-92
- Lesson 12: review p.145-150
- Lesson 13: p.33-35, review 51-53
- Lesson 14: none
- Lesson 15: p.93-117
- Lesson 16: p.121-123
- Lesson 17: none
- Lesson 18: none
- Lesson 19: p.153-160
- Lesson 20: review p.74-76
- Lesson 21: p.132
- Lesson 22: review p.45-46
- Lesson 23: none
- Lesson 24: p.55-70
- Lesson 25: p.160-166
- Lesson 26: p.174-177
- Lesson 27: p.167-174, 178-184
- Lesson 28: p.123-126
- Lesson 29: p.150-152
- Lesson 30: none
- Lesson 31: review p.93-96
- Lesson 32: none
- Lesson 33: review p.80-92
- Lesson 34: review p.150-152
- Lesson 35: p.133-144

Course Schedule

The assignments in the lectures and *Field Guide* are timed with what it happening in the sky throughout the school year. It is important, therefore, that students follow the schedule of lectures at their assigned times.

Dates for each lesson can be found at **experienceastronomy.com/dates**.

This means there will likely be lessons that don't align with your group's schedule. That's okay. Here's how to handle weeks when there is a lecture but you are not meeting.

- Email your students with a link to the online video lesson. Instruct them to watch the video and take notes.
- Every lesson page also mentions the *Field Guide* assignment and the recommended reading. Remind students it is their responsibility to do the reading and outdoor assignment.
- Encourage students to use the neave.com planetarium if they need help finding any constellations or planets. You may even wish to supply them with a link to the online planetarium and some brief written instructions. (For example: "This week you'll be looking for Summer Constellations. Once you've set your planetarium to your location and the proper date, you'll be able to see the constellations Cygnus, Lyra, Aquila, and Hercules fairly high overhead. Note what the constellations look like and where they are before you go outside to see them under the real sky.")
- As for quizzes, you can choose to (1) not give quizzes during the weeks you don't meet for class, or (2) send an electronic copy of the quiz to your students' parents to administer at home.

Class Dates

The following are the suggested dates for each of the lessons for the 2018-2019 school year.

September 2-8: Course Introduction
September 9-15: The Movement of the Sun
September 16-22: Summer Constellations
September 23-29: The Magnitude of Stars
September 30 - October 6: The Northern Constellations
October 7-13: The Planet Saturn
October 14-20: The Seasonal Skies (Part 1)
October 21-27: The Seasonal Skies (Part 2)
October 28 - November 3: Fall Constellations
November 4-10: The Zodiac (Part 1)
November 11-17: The Zodiac (Part 2)
November 18-24: The Planet Jupiter
November 25 - December 1: Orion
December 2-8: The Heliocentric Model
December 9-15: Review for Midterm Exam
December 16-22: NO CLASS
December 23-29: NO CLASS
December 30 - January 5: NO CLASS
January 6-12: Winter Constellations
January 13-19: Deeper Into Space (Part 1)
January 20-26: Deeper Into Space (Part 2)
January 27 - February 2: The Planet Mars
February 3-9: Dwarf Planets and Asteroids
February 10-16: Rising Stars
February 17-23: The Southern Constellations
February 24 - March 2: Axial Precession
March 3-19: The Phases of the Moon
March 10-16: Exploration of the Moon
March 17-23: The Biblical Calendar
March 24-30: The Modern Calendar
March 31 - April 6: Spring Constellations
April 7-13: The Planets Venus and Mercury
April 14-20: Comets and Meteor Showers
April 21-27: Lunar Eclipses
April 28 - May 4: Solar Eclipses
May 5-11: The Zodiac (Part 3)
May 12-18: Review for the Final Exam (Part 1)
May 19-25: Review for the Final Exam (Part 2)

Advanced Course Live Training Events

All events for the 2018-2019 school year take place at 11:30am Eastern.

Monday, September 17, 2018
Monday, November 5, 2018
Monday, January 7, 2019
Monday, February 18, 2019
Monday, April 1, 2019
Monday, May 13, 2019