

# NOVEMBER 2021

9:00 pm CDT on November 1  
 7:00 pm CST on November 15  
 6:00 pm CST on December 1

**To use this chart:** hold the chart in front of you and turn it so the direction you are facing is at the bottom of the chart.

- **Bright Stars**
- **Medium Bright Stars**
- **Faint Stars**

**Scan dark skies with binoculars:**

- M-31: The Andromeda Galaxy
- M-15: Globular star cluster
- M-45: Pleiades open star cluster
- The Hyades star cluster in Taurus

As autumn continues, sunrises occur later and sunsets occur earlier. The days are getting shorter!

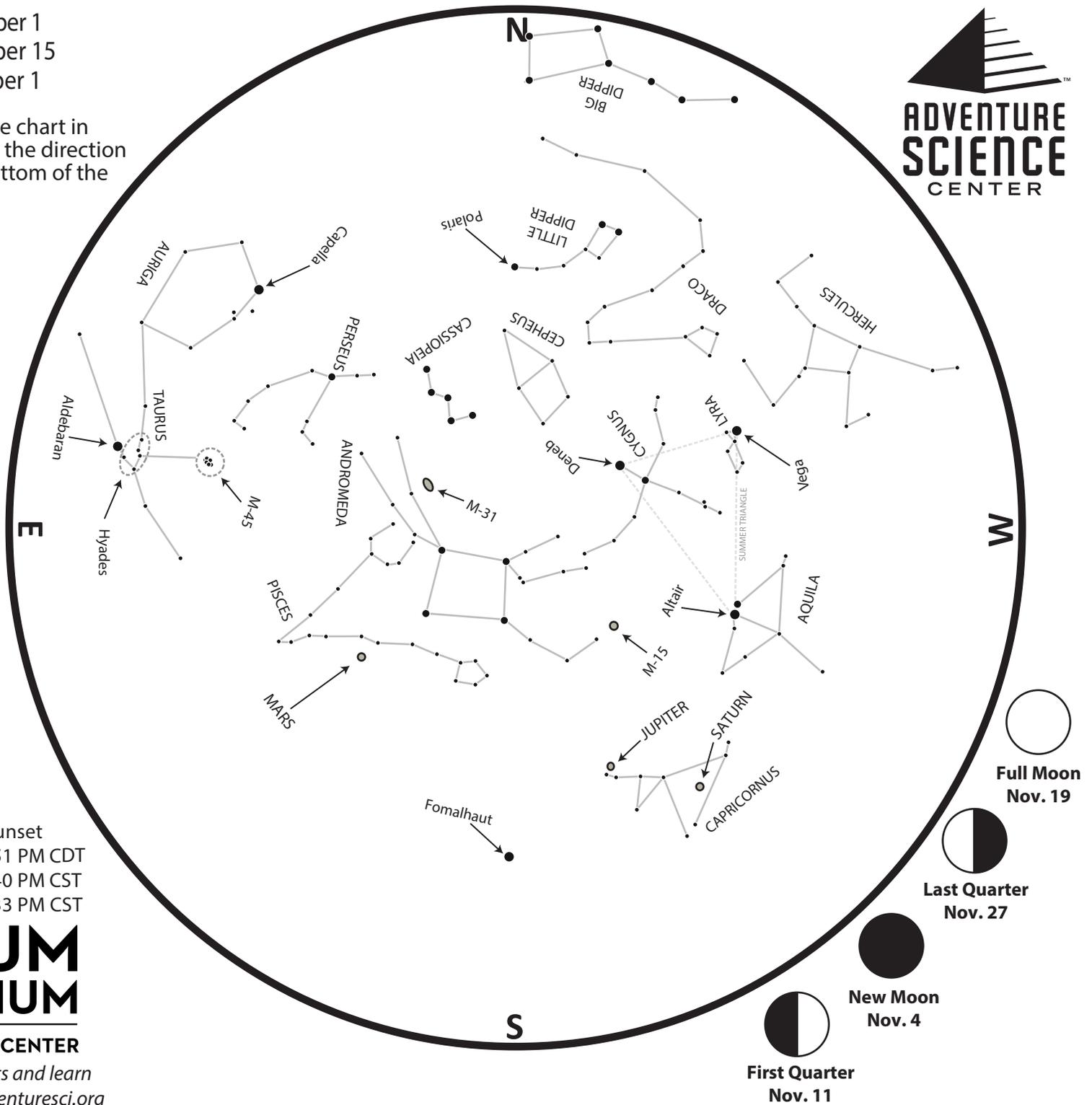
From Nashville:

	Sunrise	Sunset
Nov 1	7:10 AM CDT	5:51 PM CDT
Nov 15	6:23 AM CST	4:40 PM CST
Dec 1	6:39 AM CST	4:33 PM CST

## SUDEKUM PLANETARIUM

AT ADVENTURE SCIENCE CENTER

Download monthly star charts and learn more about our shows at [adventuresci.org](http://adventuresci.org)



Full Moon  
Nov. 19

Last Quarter  
Nov. 27

New Moon  
Nov. 4

First Quarter  
Nov. 11

## NOVEMBER 2021

### After Sunset

As skies begin to darken after sunset, look low to the southwest for planet **Venus**. You'll need a horizon clear of trees or buildings to easily see it. Watch for a thin crescent Moon near Venus on the evening of November 7th.

For much of the year, we use the stars of the **Big Dipper** to help us find **Polaris**, the **North Star**. However, the Big Dipper is harder to find in the autumn. It appears very low to the northern horizon after sunset. Some of its stars even set below the horizon from our latitude.

Another group of stars can help us find our way. Look for a group of five stars known as **Cassiopeia the Queen**. When the Big Dipper is low to the horizon, Cassiopeia is high in the north. The central peak of this constellation's W-shape also points you in the direction of Polaris.

Polaris is not a particularly bright star, but it does remain fixed in the sky throughout the night and throughout the year. When you face the North Star, you're facing due north. Polaris is at the end of the handle of the **Little Dipper**. This group of stars is officially known as **Ursa Minor the Little Bear**.

Look high in the west for the three stars that make up the **Summer Triangle**. Despite the name, the Summer Triangle stars are a great sight for autumn skies and may be the first stars you'll see as the sky begins to darken. The three stars are part of three separate constellations: **Cygnus the Swan**, **Aquila the Eagle**, and **Lyra the Harp**. The Summer Triangle is so named because it's up all night during the summer, from sunset to sunrise. In the autumn, it's already high overhead by sunset, and will be lower in the west by midnight.

Off to the east is one of the first signs of oncoming winter skies, the red star **Aldebaran** in **Taurus the**

**Bull**. Stay out a little later, and **Orion the Hunter** rises too, with its distinctive red star **Betelgeuse**.

High in the southwest are the planets **Jupiter** and **Saturn**. Jupiter is the brighter of the two. Both planets are in the constellation **Capricornus the Sea Goat**. Capricornus may be famous, but it's hard to find without clear dark skies and an excellent imagination.

A small telescope not only reveals the four largest moons of Jupiter, but also the planet's cloud bands. Jupiter has stripes! You can also see up to four of Jupiter's largest moons, called the **Galilean moons**. Saturn's rings are easily visible with a small telescope.

You may be able to see the Galilean moons of Jupiter with just a good pair of binoculars. If you have trouble pointing your binoculars at Jupiter, try leaning them up against the side of a building or another steady surface. Watch the moons over several nights as they orbit around their parent planet.

Watch Earth's own Moon pass by Saturn and Jupiter on the evenings of November 9-12.

### From Dark Skies

Bright outdoor lighting can make it hard to see all but the brightest stars. On a clear night, find a dark spot far away from city lights, give your eyes time to adjust to the dark, and look for even more celestial sights. You can begin by looking for the fainter stars of this season's constellations. **Pegasus the Flying Horse**, **Andromeda the Princess**, and the three constellations of the Summer Triangle all become easier to explore.

Look closely for the star that marks the head of Cygnus the Swan, a fairly boring-looking white colored star called **Albireo**. A small telescope reveals that there are really two stars there, appearing very close to each other. Not only that, but the two stars are different colors, one blue and one yellow!

Autumn evenings are great for spotting the **Milky Way** coursing from the eastern to western horizon, high overhead through Cassiopeia. This hazy band of light is the bulk of our disc-shaped galaxy, as we see it from within.

Near Andromeda, look for **M-31**, the **Andromeda Galaxy**. This massive spiral galaxy is the most distant object visible to the unaided eye, but to find it it requires crisp, dark skies and a little patience. Binoculars or a small telescope can improve the view, but don't expect to see more than a faint, fuzzy, oval blob. If you don't feel exactly awestruck at the sight, just

remind yourself you're looking at the collected light of possibly one trillion stars, all at a distance of 2 million light years away. Now that's impressive!

### Early Morning

As the Earth orbits the Sun throughout the year, the constellations rise and set just a little bit earlier every day. You won't see much difference from night to night, but you will over the course of weeks or months. What we see in today's pre-dawn sky is a preview of the early evening sky in later months. Go out before dawn this month for a look ahead at the early winter night sky.

In the hours before dawn, Jupiter, Saturn, and most of the Summer Triangle have already set. Pegasus and Andromeda have set, too. Winter constellations **Orion the Hunter** and **Taurus the Bull** are high in the west. High in the east sits **Leo the Lion**, a reminder that spring is on the way.

Remember how the Big Dipper was too low to easily find in the early evening? Now it's high in the northeast. Can you find Cassiopeia?

### Watch the Clock

At 2:00 am on Sunday morning, November 7, most of the United States will be asleep as we "fall back" from **Daylight Saving** to **Standard Time**. Don't forget to set your clocks back by one hour before bedtime!

### This Month in the Sudekum Planetarium

S P A C E  
E X P L O R E R S  
T H E I S S E X P E R I E N C E

THE SECRETS OF  
**GRAVITY**

IN THE FOOTSTEPS OF ALBERT EINSTEIN

**SUDEKUM  
PLANETARIUM**

AT ADVENTURE SCIENCE CENTER