

# astronomical calendar

BUHL PLANETARIUM & OBSERVATORY

Winter  
2018–19

Dec 14  
8:00 pm



Southwest

## DECEMBER 2018

2	Sun	Venus at its brightest (Look southeast in the am)
3	Mon	Venus 3 degrees below waning crescent moon (Look southeast in the am)
7	Fri	● New Moon – 2:20 am
13	Thurs	Geminid Meteor shower maximum (Mid-evening until dawn Dec. 14)
14	Fri	Mars 4 degrees above Moon (Look south in the pm)
15	Thurs	🌑 First Quarter Moon – 6:49 am
21	Fri	Mercury 1 degree above Jupiter (Look southeast at dawn) Winter Solstice – 5:23 pm
22	Sat	○ Full Moon (Cold Moon) – 12:48 pm
29	Sat	🌑 Last Quarter Moon – 4:34 am

January 23  
6:30 am



Southeast

## JANUARY 2019

1	Tues	Venus 3 degrees below waning crescent (Look southeast before dawn)
2	Wed	Jupiter 8 degrees below waning crescent (Look southeast before dawn)
3	Thurs	Quadrantid Meteor Shower (Overnight until dawn on Jan. 4) Earth reaches perihelion, the point at which it is closest to the Sun, at 91,403,554 miles
5	Sat	● New Moon – 8:28 pm
12	Sat	Mars 4 degrees above waxing crescent Moon (Look in the pm)
14	Mon	🌑 First Quarter Moon – 1:45 am
20	Sun	Total Lunar Eclipse – 10:33 pm Dec. 20 through 1:50 am Dec. 21
21	Mon	○ Full Moon (Wolf Moon) and Supermoon – 12:16 am
23	Wed	Jupiter 2 degrees below Venus (Look southeast before dawn)
27	Sun	🌑 Last Quarter Moon – 4:10 pm
31	Wed	Venus 2 degrees below waning crescent Moon (Look southeast before dawn)

February 18  
6:00 am



Southeast

## FEBRUARY 2019

1	Fri	Saturn 8 degrees below waning crescent Moon (Look southeast dawn)
4	Mon	● New Moon – 4:03 pm
10	Sun	Mars 5 degrees above waxing crescent Moon (Look southwest in the pm)
12	Tues	🌑 First Quarter Moon – 5:26 pm
18	Sat	Venus within 1 degree of Saturn (Look southeast before dawn)
19	Tues	○ Full Moon (Snow Moon) and Supermoon – 10:53 am
26	Tues	Mercury at greatest elongation (Look west after sunset) 🌑 Last Quarter Moon – 9:27 am
27	Wed	Jupiter 2 degrees below waning crescent Moon (Look south-southeast in the am)
28	Thurs	Venus, Saturn, Moon, and Jupiter aligned (Look southeast dawn)

**Winter Planet Visibilities**

<b>December</b>	<b>Morning:</b>	Mars and Jupiter (Southeast) Mercury (Southeast) late month
	<b>Evening:</b>	<i>No Planets Visible</i>
<b>January</b>	<b>Morning:</b>	Mercury and Saturn (Southeast) Mars and Jupiter (South)
	<b>Evening:</b>	<i>No Planets Visible</i>
<b>February</b>	<b>Morning:</b>	Saturn (Southeast) Mars and Jupiter (Southeast)
	<b>Evening:</b>	Venus (Low in the west mid-month)

**Astronomy Events to Watch for in 2019**

*The Geminid meteor shower, one of the year's best displays of shooting stars, will peak during the entire night of Dec. 13 and morning of Dec. 14.*

**Dec. 13 and 14 – Geminid Meteor Shower**

The Geminids and the Perseids in August are the most prolific meteor showers of the year. Under favorable skies, the shower can produce nearly 120 meteors per hour at its peak.

However, the shower appears to have been intensifying in recent years, and

it's possible for observers to see 160 meteors per hour. Best viewing will be from 10 pm–6 am. Observing conditions can take place earlier in the night because Gemini will be well above the horizon by 8:30 pm. As with all meteor showers, though, peak viewing will occur after midnight. Since the waxing crescent Moon sets around 10 pm, it will not interfere with this year's display during the shower's peak viewing hours.

To enjoy the Geminid meteor shower, observe from a location that is as dark as possible and allows you to see a large portion of the sky. Don't use a telescope or binoculars. The meteors will appear to radiate from the stars near Gemini and Orion, but they can spread out over most of the sky.

**New Horizons on New Year's Eve**

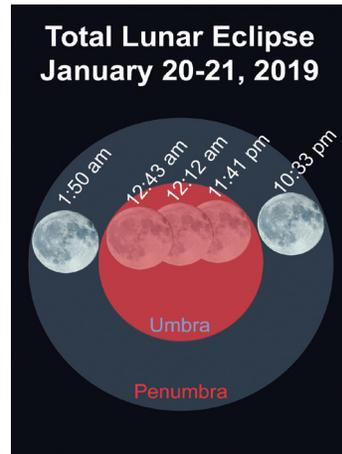
Shortly after midnight on Jan. 1, 2019, NASA's New Horizons spacecraft will fly by Kuiper Belt Object 2014 MU69. This small, icy world is nicknamed Ultima Thule—a term used in classical and medieval maps and literature for the most distant, unknown lands. Ultima Thule orbits our Sun 1 billion miles beyond Pluto. New Horizons is now on track to perform the most distant fly-by in history.

The piano-sized New Horizons space probe is exploring the Kuiper Belt, an icy region beyond Neptune. In 2015, NASA's New Horizons spacecraft captivated the world with images of Pluto's surface and its moons. Now, New Horizons is speeding toward the ultimate sequel: Ultima Thule.

Ultima Thule was discovered by the Hubble Space Telescope in 2014. It may be one object about 19 miles in diameter, or perhaps even two smaller objects. Ultima Thule may be a binary system of two objects that contact each other, or orbit closely around a common center of mass, or barycenter. New Horizons is on its way to find out.

**Jan. 20 – Total Lunar Eclipse**

*If the weather cooperates on Sunday night, Jan. 20, you can witness one of nature's grand spectacles, a total lunar eclipse.*



A total lunar eclipse occurs during a Full Moon when the entire Moon passes through Earth's dark umbral or inner shadow. Once the Moon contacts the edge of the umbral shadow, it takes about an hour to become fully immersed in the shadow, at which point totality begins. An

eclipse does not occur every time there is a Full Moon because the Moon's orbit around the Earth doesn't lie exactly in the ecliptic, the plane in which the Earth orbits the Sun. The Moon's orbit is inclined by about 5 degrees in respect to it. So, in the course of a month, the Moon travels above or below the Earth's shadow.

**Science Fact:**

The exact color of the Moon during a total lunar eclipse depends on how much dust and clouds are present in the atmosphere. If you see the Moon turn red, it's because the light hitting the Moon from the Sun had to travel through the Earth's atmosphere. The atmosphere scatters blue light more than red light, so what comes out the other side is red. This reddish light bounces off the Moon, comes back to Earth, and meets your eyes.



**Join stargazers rain or shine for SkyWatch.**

Fri., Dec. 21 • Sat., Jan. 12 • Sat., Feb. 9 • 7 and 9 pm  
Sun., Jan. 20 – Check out the total lunar eclipse! • 9 pm

\$4 for non-members/\$2 for members and as an add-on to general admission.  
For details visit [CarnegieScienceCenter.org/planetarium](http://CarnegieScienceCenter.org/planetarium)

