

**2020****Buhl Planetarium & Observatory****ASTRONOMICAL CALENDAR****Fall**Sunday, September 6  
5:00 AM

South

**SEPTEMBER 2020**

2	○ Wed	Full Moon (Fruit Moon)
6	Sun	Moon within 1 degree of Mars (Look south before dawn)
7	Mon	Venus reaches highest point in morning sky (Look east at sunrise)
10	🌑 Thurs	Moon at last quarter phase
14	Mon	Moon within 5 degrees of Venus (Look east before dawn)
17	● Thurs	New Moon
22	Tues	Fall equinox
23	🌒 Wed	Moon at first quarter phase
25	Fri	Moon within 2 degrees of Jupiter (Look south after sunset) Moon within 3 degrees of Saturn (Look south after sunset)

**OCTOBER 2020**

1	○ Thurs	Full Moon (Harvest Moon)
3	Sat	Moon within 1 degree of Mars (Look west before dawn)
9	🌑 Fri	Moon at last quarter phase
13	Tues	Moon within 5 degrees of Venus (Look east before dawn) Mars at opposition (Look south in Pisces around midnight)
16	● Fri	New Moon
21	Wed	Orionid meteor shower peak (Best displays before dawn)
22	Thurs	Moon within 2 degrees of Jupiter (Look south at dusk) Moon within 3 degrees of Saturn (Look south at dusk)
23	🌒 Fri	Moon at first quarter phase Moon within 3 degrees of Saturn (Look south at dusk)
29	Thurs	Moon within 3 degrees of Mars (Look south at midnight)
31	○ Sat	Full Moon (Blue Moon)

**NOVEMBER 2020**

8	🌑 Sun	Moon at last quarter phase
12	Thurs	Moon within 3 degrees of Venus (Look southeast at dawn) Northern Taurid meteor shower peak (Best displays around 1 am)
15	● Sun	New Moon
17	Tues	Leonid meteor shower peak (Best displays before dawn) Pleiades well-placed for observation (Look south in Taurus at midnight)
19	Thurs	Moon within 3 degrees of both Jupiter and Saturn (Look south at dusk)
21	🌒 Sat	Moon at first quarter phase
25	Wed	Moon within 5 degrees of Mars (Look south around 9pm)
30	○ Mon	Full Moon (Beaver Moon) Penumbral lunar eclipse

Thursday, October 22  
7:30 PM  
Deneb

South

Thursday, November 12  
6:30 AM

Leonid Meteor Shower



East

## Fall Planet Visibilities

<b>September</b>	<b>Evening:</b>	Mars (Look east late September) Jupiter (Look south) Saturn (Look south) Uranus (Look east with telescope late September)
	<b>Morning:</b>	Venus (Look east) Mars (Look south) Uranus (Look south with telescope)
<b>October</b>	<b>Evening:</b>	Mars (Look southeast) Jupiter (Look southwest) Saturn (Look southwest) Uranus (Look southeast with telescope)
	<b>Morning:</b>	Venus (Look east early October) Mars (Look southwest) Uranus (Look southwest with telescope)
<b>November</b>	<b>Evening:</b>	Mars (Look south) Uranus (Look southeast with telescope)
	<b>Morning:</b>	Venus (Look southeast early November) Uranus (Look west with telescope early November)

## Science Fact: Fall Equinox

*Tues., Sept. 22 is the fall equinox, the first day of autumn in the northern hemisphere.*

The word equinox comes from the Latin words for “equal night.” The Sun will shine directly on the equator; daytime and nighttime will be nearly equal in length around the globe. From our perspective on the ground, the Sun will rise due east, and set due west on our horizon.

The Fall Equinox is also known as the southward equinox. After Tues., Sept. 22, the Sun will rise and set south of the equator and appear more southerly in our sky. In the fall, the days will become shorter and nights will become longer here in the northern hemisphere. The southward equinox marks the first day of autumn in the northern hemisphere, but also the first day of spring in the southern hemisphere!

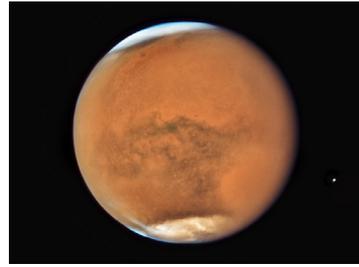
Earth’s axis is tilted 23.5 degrees away from vertical, in relation to our orbit around the Sun. At the September equinox, Earth’s axis will be oriented perpendicular to the Sun’s rays, so the Sun’s light will be spread evenly around the globe. As Earth continues in its orbit, its axis will be tilted away from the Sun, and fall will turn to winter by the December solstice here in the northern hemisphere.

2020

Buhl Planetarium & Observatory

# ASTRONOMICAL CALENDAR

## Celestial Events to Watch for this Fall



### MARS AT OPPOSITION

*On Tues., Oct. 13, the Red Planet will be at its best and brightest all year. Mars will be at its closest to Earth, as both planets lap the Sun in their orbits.*

Mars will be fully illuminated by the Sun and visible throughout the night, making it the best time of year to view its red surface with a telescope. Lighter orangish red areas reveal the iron oxide surface of this rusty, crusty, and dusty world, while darker areas indicate regions of exposed volcanic rock from ancient eruptions. You may even spot the white polar ice caps!

## Astronomy History

*Sat., Oct. 17 marks the birthday of Dr. Mae Jemison!*

A retired NASA shuttle astronaut, Mae Jemison is the first Black woman to have gone to space. In school, she earned a degree in chemical engineering and African-American studies and went on to earn her medical degree from Cornell University. She was a medical practitioner for many years before she, inspired by the flights of astronauts Sally Ride and Guion Bluford, joined NASA in 1987. Jemison flew on the STS-47 mission as a Mission Specialist, spending nearly eight days in space. She has also appeared in an episode of *Star Trek: The Next Generation!* She continues her work in public speaking, sharing her experiences in the medical field and her time at NASA.

## Celestial Events to Watch for this Fall continued...

### BLUE MOON

*On Sat., Oct. 31, the Full Moon will deliver a spooky science treat for lunar observers!*

The Moon’s face will be fully illuminated, as the Moon will be located on the opposite side of the Earth as the Sun. This is the second Full Moon in the same month, also known as a Blue Moon. This calendar oddity occurs only once every few months, or “once in a Blue Moon.”

The Full Moon is a perfect opportunity to explore lunar geology with a small telescope. Spot bright Tycho Crater, with impact streaks radiating like spokes on a wheel on the south of the Moon. Darker patches on the Moon were formed by lava flows from ancient volcanoes; look for the Ocean of Storms, the Sea of Serenity, and the Sea of Tranquility.

**THE PLEIADES**

*On Tues., Nov. 17, stargazers will be treated to a view of the Pleiades star cluster, high in the sky and well placed for telescope observation around midnight.*

Locate the constellation of Orion in the southern sky, then follow a line through Orion's belt, past the red giant Alderbaran, the "eye" of Taurus the Bull, straight to a tiny, misty "microdipper" in the night sky.

The Pleiades' name derives from an ancient Greek word meaning "to sail," as its appearance in the sky heralded the fall season of navigation on the Mediterranean Sea.

The Pleiades also refers to seven divine sisters who were "daughters of Pleione."

In Japan, these seven sisters are known as the Subaru, which means "to cluster."

In fact this star cluster inspired the logo for the car company Subaru!

The Pleiades contain hot, bright, blue stars. These stars are currently passing through a dust cloud that creates a blue, "frosty" effect, perfect for stargazing on a crisp November evening.

**Space News: Asteroid Touchdown!**

*Slated for Tues., Oct. 20, a NASA spacecraft will touch down on the surface of near-Earth asteroid Bennu.*

Bennu was named for an Egyptian mythological bird by third grade student Michael Puzio in 2012. Fittingly, the spacecraft landing on Bennu is named for a heroic Egyptian god, Osiris. OSIRIS-REx is the Origins, Spectral Interpretation, Resource Identification, and Security-Regolith Explorer. OSIRIS-Rex will attempt a daunting and daring mission on the surface of the asteroid: collecting a sample and returning it to Earth!

OSIRIS-Rex will have three shots at obtaining a sample, each time touching the asteroid's surface for about five seconds, firing a charge of pressurized nitrogen to disturb the surface, and collecting a sample as it backs away.