

Scope on the Skies

February 2005

Throughout each month, our Moon appears in conjunction with planets and stars along the ecliptic. A conjunction occurs when, in this case, the Moon lies in the same direction as a star or planet. From our perspective, the object looks close. February is no exception, and there will be several opportunities on both sides of the Sun to locate planets or bright stars with the assistance of our Moon (as our Moon is easy to locate).

West of the Sun (before sunrise)

Sunrise this month will be approximately between 6:00 a.m. and 6:30 a.m. local (eastern) time; at that hour the sky will be somewhat dark enough to see the Moon and Jupiter, and for most of the month, Mars as well.

On January 31, the waning gibbous Moon will be very close to the planet Jupiter and will lay between Jupiter and the bright star Spica in the constellation Virgo, the Harvest Maiden. By the following night, the Moon will have moved eastward past Spica, and over the next five days will pass by the reddish star Antares in Scorpius, the Scorpion (February 3–4). By February 5, it will appear as a very thin waning crescent Moon just below the planet Mars.

This same pattern will repeat itself toward the end of the month as the waning gibbous Moon, on February 27, will again be in a close conjunction with Jupiter. This time both the Moon and Jupiter will be slightly closer to the star Spica, lower over the southwestern horizon, and it will be another seven days before the waning crescent Moon will be in conjunction with Mars.

East of the Sun (after sunset)

By February 10, our Moon will have moved along its orbital around the Sun with the Earth and will be back in the evening skies. Sunset will be approximately between 6:00 p.m. and 6:30 p.m. and by 7 p.m. EST the sky will be dark enough for the thin waxing crescent Moon to be seen over the southwestern horizon. At 7 p.m. each evening, the Moon may be observed moving eastward and increasing in phase appearance.

On February 15, the first quarter Moon will be high over the southern horizon and just west, about 2 degrees west of the Pleiades, in Taurus, the Bull. The next evening, at 7 p.m., the waning gibbous Moon will be about 10 degrees

east of the Pleiades, and just above the reddish star marking the eye of the bull, Aldebaran.

On February 19, look for the waning gibbous Moon to be over the eastern horizon at approximately 7 p.m. local (eastern) time. It will be just west of the twin stars, Pollux and Castor in Gemini, the Twins, and above the planet Saturn. The next evening at the same time, the Moon will be below the twin stars and to the east of Saturn.

The full Moon will be above the eastern horizon, and below the bright star Regulus in Leo, the Lion, at 7 p.m. on the evening of February 23.

While plotting the planets and the Moon, have your students pay attention to the right ascension values for Jupiter and Saturn. Right ascension is an extension of meridians of longitude onto the celestial sphere and is essentially the same as measuring longitude except that the 24 meridians are numbered 0–23 and there is no west, only east. Saturn appears to be moving westward, rather than eastward as planets typically do, and by February 27 Jupiter will begin this westward, or retrograde motion as well. The apparent backward or westward motion of an outer planet is a result of the more quickly moving Earth catching up with and then passing by the outer planet. All planets orbit the Sun in an eastward motion as we view them from the Earth; however, from our perspective an outer planet will appear to move toward the west, in retrograde as we pass them by.

Using the free SFA star charts from the Stephen F. Austin Observatory (see resource link) and coordinate tables (see Internet resources for websites that can help students to generate data tables), students can observe the Moon and also follow its path relative to several planets.

Moon phases

Last quarter	2/2
New moon	2/8
First quarter	2/16
Full moon	2/24

February

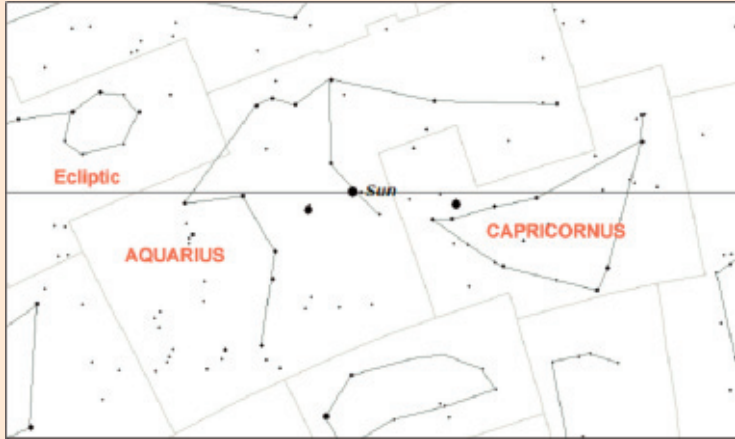
Internet resources

ICE (Interactive Computer Ephemeris): supernova7.apsc.csi.cuny.edu/teacher/icez.zip
 Ephemeris: ephemeris.com/ephemeris.php
 SFA star charts: www.cox-internet.com/ast305/SFAStarCharts.html
 Heavens-Above: www.heavens-above.com
 Ephemeris generator: ssd.jpl.nasa.gov/cgi-bin/eph

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Tracking the sun

Throughout the school year information and data will be provided through this column so that students may indirectly follow the Earth along its orbital path, the ecliptic, around the Sun. Because, from our perspective it is the Sun that is “moving,” students will actually be graphing the Sun’s apparent motion caused by the Earth’s real orbital and rotational motions. This graph-ready data will include celestial coordinate position, and midday altitude of the mid-month Sun, its distance from the Earth, and the Sun’s apparent size. In addition to graphing the data provided each month, students can follow and plot the Sun’s location along the ecliptic each month after downloading the free SFA star charts (see link at the end of the article).



Sun on February 20 in Aquarius

During February, the Sun’s apparent motion along the ecliptic will take it across the constellations of Capricornus, the Sea Goat, and into the boundaries of Aquarius, the Water Bearer.

On this date at midday EDT:

Date	Time of midday Sun	Distance (in AU)	Altitude	Apparent size	Right ascension	Declination
2/20	(1331)	0.9889	30° 21'	32'	22h 16m	-10° 43'

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