

"Some things just can't be described. And stepping onto the moon was one of them." Buzz Aldrin



ASTRO

NEWSLETTER

Special Edition

July 27, 2018

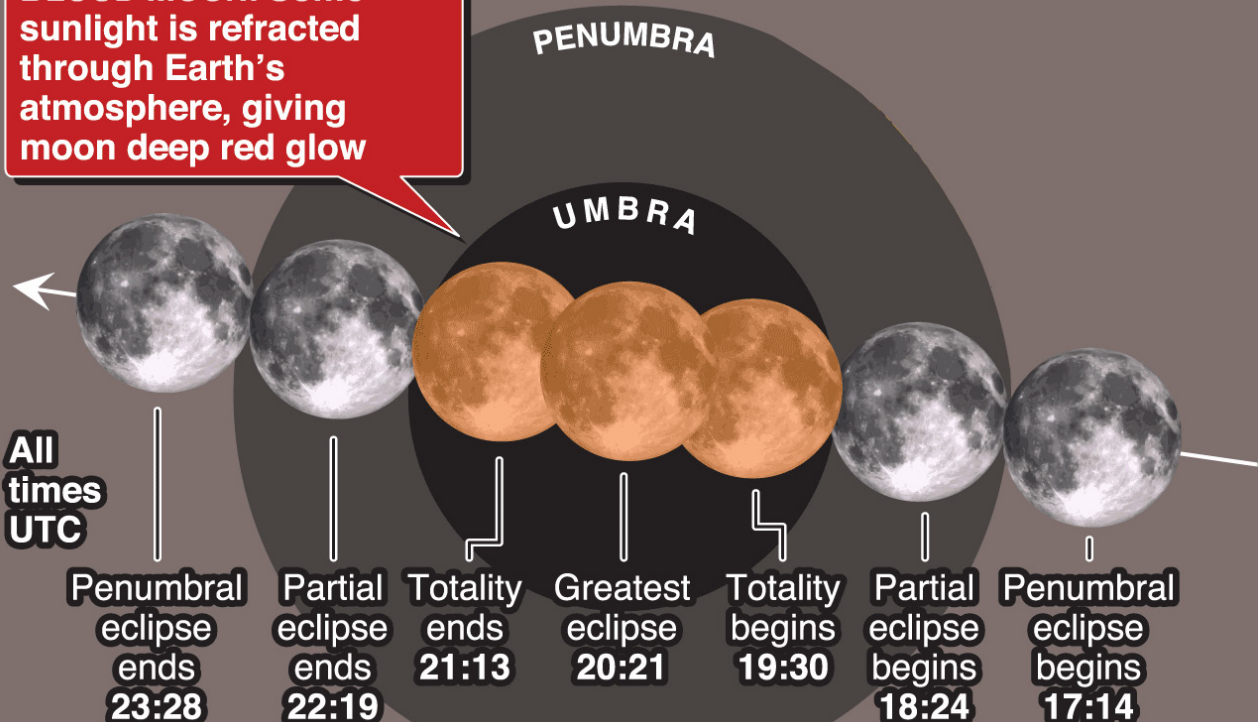
CENTURY'S LONGEST LUNAR ECLIPSE JULY 27



The full moon on the night of July 27-28, 2018, presents the longest total lunar eclipse of the 21st century (2001 to 2100). The total phase of the eclipse – called the totality – spans 1 hour 42 minutes and 57 seconds. That's in contrast to the shortest total lunar eclipse of this century, which occurred on April 4, 2015 and lasted 4 minutes and 48 seconds. And it's in contrast to 2018's other total lunar eclipse – on January 31, 2018 – whose totality lasted 1 hour and 16 minutes.

A partial eclipse precedes and follows the total phase of the eclipse, each time lasting 1 hour and 6 minutes. So, from start to finish – on July 27-28, 2018 – the moon spends nearly 4 hours (3 hours and 55 minutes) crossing the Earth's dark umbral shadow. The greatest eclipse (20:22 UTC) takes place at or around midnight for Madagascar and the Middle East. Europe and Africa view the greatest eclipse during the evening hours (sometime between sunset and midnight on July 27), whereas most of Asia, Indonesia and Australia view the greatest eclipse in the morning (sometime between midnight and sunrise on July 28).

BLOOD MOON: Some sunlight is refracted through Earth's atmosphere, giving moon deep red glow



What Is a Total Lunar Eclipse?

A total lunar eclipse takes place when the Earth comes between the Sun and the Moon and covers the Moon with its shadow. When this happens, the Moon can turn red, earning it the nickname of Blood Moon.

Paired Together

Total eclipses of the Moon happen at Full Moon when the Sun, Earth, and Moon are aligned to form a line. The astronomical term for this type of alignment is syzygy, which comes from the Greek word for being paired together.

Earth Blocks the Sunlight

The Moon does not have its own light but shines because its surface reflects the Sun's rays. During a total lunar eclipse, the Earth comes between the Sun and the Moon and blocks any direct sunlight from reaching the Moon. The Sun casts the Earth's shadow on the Moon's surface.

Sun, Earth, and Moon Aligned

For a lunar eclipse to occur, the Sun, Earth, and Moon must be roughly aligned in a line. Otherwise, the Earth cannot cast a shadow on the Moon's surface and an eclipse cannot take place.

When the Sun, Earth, and Moon come together in a straight line, a total lunar eclipse takes place. When the three bodies are aligned in a way that the Moon is partly covered by the Earth's umbra, a partial lunar eclipse is the result. On the other hand, if only the outer part of Earth's shadow covers the Moon, a penumbral lunar eclipse takes place. Earth's umbra extends into space far beyond the orbit of the moon. This means that Earth's antumbra plays no role in lunar eclipses.

The Moon Looks Red

Even though Earth blocks sunlight from directly reaching the surface of the Moon during a total lunar eclipse, the Moon is still visible to the naked eye. This is because Earth's atmosphere bends sunlight and indirectly lights up the Moon's surface.

When sunlight passes through the Earth's atmosphere, it gets refracted towards the Earth's surface, and part of it—the colors with shorter wavelengths—gets scattered and filtered out, while the rest, colors with longer wavelengths like orange and red, passes through the atmosphere. This light is once again refracted towards the surface of the fully eclipsed Moon, thus illuminating it in a reddish-orange glow. Because of this, a total lunar eclipse is sometimes colloquially called a Blood Moon.

A total lunar eclipse usually happens within a few hours. Totality can range anywhere from a few seconds to about 100 minutes. The July 26, 1953 total lunar eclipse had one of the longest periods of totality in the 20th century—100 minutes and 43 seconds.

There are 7 stages of a total lunar eclipse:

Penumbral eclipse begins: This begins when the penumbral part of Earth's shadow starts moving over the Moon. This phase is not easily seen by the naked eye.

Partial eclipse begins: Earth's umbra starts covering the Moon, making the eclipse more visible.

Total eclipse begins: Earth's umbra completely covers the Moon and the Moon is red, brown, or yellow in color.

Maximum eclipse: This is the middle of the total eclipse.

Total eclipse ends: At this stage, Earth's umbra starts moving away from the Moon's surface.

Partial eclipse ends: Earth's umbra completely leaves the Moon's surface.

Penumbral eclipse ends: At this point, the eclipse ends and Earth's shadow completely moves away from the Moon.



Space Camp Turkey, Aegean Free Zone 35410 Gaziemir, Izmir / Turkey

Phone : +90 232 252 35 00 Fax : +90 232 252 36 00

Email: info@spacecampturkey.com

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