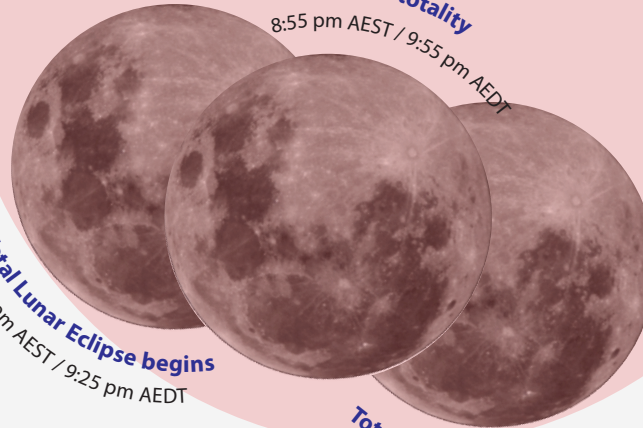# Total Lunar Eclipse

8 October 2014

www.nightskyonline.info

Penumbral Lunar Eclipse begins
6:14 pm AEST / 7:14 pm AEDT

Partial lunar Eclipse begins
7:15 pm AEST / 8:15 pm AEDT

Total Lunar Eclipse begins
8:25 pm AEST / 9:25 pm AEDT

Mid-totality
8:55 pm AEST / 9:55 pm AEDT

Total Lunar Eclipse ends
9:25 pm AEST / 10:25 pm AEDT

Earth's umbra (darkest part of Earth's shadow)

Partial Lunar Eclipse ends
10:35 pm AEST / 11:35 pm AEDT

Penumbral Lunar Eclipse ends
11:35 pm AEST / 12:35 am AEDT 9 October

Wednesday 8 October 2014's total lunar eclipse will be visible across Australia, and is particularly well placed for for Eastern Australian observers.

At it's simplest, a lunar eclipse occurs when the Moon temporarily passes through the shadow of the Earth, and the Moon's surface takes on the colour of the Earth's shadow. Depending on the phase (or stage) of the eclipse, part or all of the Moon may be darkened and colourless, or even become faint orange or red.

Paul Floyd's
Astronomy & Space Website

Partially eclipsed Moon
April 2014. Photo copyright Paul Floyd
www.nightskyonline.info

A Lunar Eclipse can only occur when the Moon, Earth and Sun temporarily align. This almost occurs every month and coincides with the time of Full Moon. However, an eclipse doesn't happen each month because the orbit of the Moon is tilted approximately 5 degrees relative to the plane in which the Earth orbits the Sun. This means that the Moon usually passes above or below the Earth's shadow and there is no lunar eclipse. This will be second lunar eclipse for this year. The first eclipse for the year occurred on the evening of 14 April 2014.
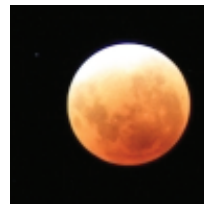
Eclipsed Moon at totality
December 2011. Photo copyright Paul Floyd
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Total lunar eclipses can be quite dramatic. Casual skywatchers may expect that the Moon would merely darken and take on a dark grey appearance during a Total Lunar Eclipse. However, the Moon actually takes on a dark orange or even in extreme cases a dark 'blood' red colour (if there is a lot of volcanic dust in the Earth's atmosphere). This is caused by the Earth's atmosphere bending light into its shadow. Blue light is scattered easiest and doesn't make it into the Earth's shadow. Red light is scattered least and is bent most into the Earth's shadow. Hence, the Moon takes on an orange or reddish appearance during a total lunar eclipse.

Sun, Earth and Moon eclipse diagram not to scale

Earth's umbra

Earth's penumbra

Photo credits: Earth, Moon and Sun images courtesty NASA.