

2015 CALENDAR OF ASTRONOMICAL EVENTS

2015 PHASES OF THE MOON

EASTERN STANDARD TIME

The following table gives the date and time of the Moon's phases for the year. If [Daylight Saving Time](#) is in effect, add one hour to the times listed.

2015 Phases of the Moon			
Eastern Standard Time			
New Moon	First Quarter	Full Moon	Last Quarter
-	-	Jan 4 23:53	Jan 13 04:47
Jan 20 08:14	Jan 26 23:48	Feb 3 18:09	Feb 11 22:50
Feb 18 18:47	Feb 25 12:14	Mar 5 13:06	Mar 13 12:48
Mar 20 04:36 T	Mar 27 02:43	Apr 4 07:06 t	Apr 11 22:44
Apr 18 13:57	Apr 25 18:55	May 3 22:42	May 11 05:36
May 17 23:13	May 25 12:19	Jun 2 11:19	Jun 9 10:42
Jun 16 09:05	Jun 24 06:03	Jul 1 21:20	Jul 8 15:24
Jul 15 20:24	Jul 23 23:04	Jul 31 05:43	Aug 6 21:03
Aug 14 09:54	Aug 22 14:31	Aug 29 13:35	Sep 5 04:54
Sep 13 01:41 P	Sep 21 03:59	Sep 27 21:50 t	Oct 4 16:06
Oct 12 19:06	Oct 20 15:31	Oct 27 07:05	Nov 3 07:24
Nov 11 12:47	Nov 19 01:27	Nov 25 17:44	Dec 3 02:40
Dec 11 05:29	Dec 18 10:14	Dec 25 06:11	-

An eclipse of the Sun can only occur at New Moon (see: [Solar Eclipses for Beginners](#)), while an eclipse of the Moon can only occur at Full Moon (see: [Lunar Eclipses for Beginners](#)). In any calendar year there are a minimum of two solar and two lunar eclipses.

If an eclipse of the Sun or Moon takes place on a given date, it is noted by a character next to the date in the table above. Solar eclipses are indicated as: T=Total, A=Annular, H=Hybrid and P=Partial. Lunar eclipses are indicated as: t=Total, p=Partial, and n=Penumbral.

[Phases of the Moon Photo Gallery](#) is an image collection showing the Moon's phases over a complete [synodic month](#).

2015 CALENDAR OF ASTRONOMICAL EVENTS

EASTERN STANDARD TIME

The following table gives the date and time of the important astronomical events for the year. If [Daylight Saving Time](#) is in effect, add one hour to the times listed. A key to astronomical terms appears below the calendar.

2015 Calendar of Astronomical Events

January - June			July - December		
Date	EST (h:m)	Event	Date	EST (h:m)	Event
Jan 02	06:35	Aldebaran 1.4°S of Moon	Jul 01	21:20	FULL MOON
03	21	Quadrantid Meteor Shower	05	13:54	Moon at Perigee: 367095 km
04	01	Earth at Perihelion:	06	14	Earth at Aphelion: 1.01668
0.98328	AU		AU		
04	23:53	FULL MOON	07	19:07	Moon at Descending Node
08	03:16	Jupiter 5.1°N of Moon	08	15:24	LAST QUARTER MOON
08	20:34	Regulus 4.1°N of Moon	12	12:55	Aldebaran 0.9°S of Moon
09	13:17	Moon at Apogee: 405411 km	14	16:15	Venus 1.5°S of Regulus
10	20	Mercury 0.6° of Venus	15	20:24	NEW MOON
12	10:33	Moon at Ascending Node	16	14	Mercury at Perihelion
13	04:27	Spica 3.1°S of Moon	18	12:34	Jupiter 4.1°N of Moon
13	04:47	LAST QUARTER MOON	18	20:06	Venus 0.4°N of Moon: Occn.
14	15	Mercury at Greatest Elong:	18	21:49	Regulus 3.4°N of Moon
18.9°E			21	06:02	Moon at Apogee: 404837 km
16	06:52	Saturn 1.9°S of Moon	21	14:32	Moon at Ascending Node
20	08:14	NEW MOON	23	05:45	Spica 4.0°S of Moon
21	12:39	Mercury 3.0°S of Moon	23	14	Mercury at Superior
21	15:06	Moon at Perigee: 359643 km	Conjunction		
21	16	Mercury at Perihelion	23	23:04	FIRST QUARTER MOON
22	00:01	Venus 5.6°S of Moon	26	03:43	Saturn 2.2°S of Moon
22	23:40	Mars 3.9°S of Moon	28	09	Delta-Aquarid Meteor
25	05:23	Moon at Descending Node	Shower		
26	23:48	FIRST QUARTER MOON	31	05:43	FULL MOON
29	12:07	Aldebaran 1.2°S of Moon	Aug 02	05:11	Moon at Perigee: 362135 km
30	09	Mercury at Inferior	03	21:53	Moon at Descending Node
Conjunction			06	21:03	LAST QUARTER MOON
Feb 03	18:09	FULL MOON	07	02	Mercury 0.5° of Jupiter
04	03:35	Jupiter 5.2°N of Moon	07	12:25	Mercury 0.8°N of Regulus
05	03:17	Regulus 4.0°N of Moon	08	17	Venus at Aphelion
06	01:25	Moon at Apogee: 406155 km	08	18:22	Aldebaran 0.7°S of Moon
06	12	Jupiter at Opposition	13	01	Perseid Meteor Shower
08	12:10	Moon at Ascending Node	14	09:54	NEW MOON
09	11:23	Spica 3.3°S of Moon	15	14	Venus at Inferior
11	22:50	LAST QUARTER MOON	Conjunction		
12	19:10	Saturn 2.1°S of Moon	16	09:34	Mercury 2.0°N of Moon
17	01:20	Mercury 3.5°S of Moon	17	18:05	Moon at Ascending Node
18	18:47	NEW MOON	17	21:33	Moon at Apogee: 405852 km
19	02:29	Moon at Perigee: 356992 km	19	12:46	Spica 4.2°S of Moon
20	19:56	Venus 2.0°S of Moon	19	22:35	Mars 0.5°S of Beehive
20	20:28	Mars 1.5°S of Moon	22	12:21	Saturn 2.6°S of Moon
21	11:05	Moon at Descending Node	22	14:31	FIRST QUARTER MOON
24	11	Mercury at Greatest Elong:	26	16	Jupiter in Conjunction
26.7°W			with Sun		
25	12:14	FIRST QUARTER MOON	29	13:35	FULL MOON
25	18:02	Aldebaran 1.0°S of Moon	29	14	Mercury at Aphelion
25	23	Neptune in Conjunction	30	10:24	Moon at Perigee: 358289 km
with Sun			31	05:16	Moon at Descending Node
Mar 03	02:56	Jupiter 5.5°N of Moon	31	21	Neptune at Opposition
04	09:29	Regulus 4.0°N of Moon	Sep 04	05	Mercury at Greatest Elong:
05	02:35	Moon at Apogee: 406386 km	27.1°E		
05	13:05	FULL MOON	05	00:09	Aldebaran 0.6°S of Moon
06	15	Mercury at Aphelion	05	04:54	LAST QUARTER MOON
07	16:04	Moon at Ascending Node	10	00:53	Venus 2.7°S of Moon
08	17:21	Spica 3.4°S of Moon	13	01:41	NEW MOON

2015 Calendar of Astronomical Events

January - June			July - December					
	12	03:25	Saturn 2.3°S of Moon		13	01:54	Partial Solar Eclipse;	
	13	12:48	LAST QUARTER MOON	mag=0.788				
	18	23:57	Mercury 5.2°S of Moon		13	23:38	Moon at Ascending Node	
	19	14:38	Moon at Perigee: 357584 km		14	06:28	Moon at Apogee: 406466 km	
	20	04:36	NEW MOON		15	01:15	Mercury 5.3°S of Moon	
	20	04:46	Total Solar Eclipse;		15	19:00	Spica 4.3°S of Moon	
mag=1.045					18	21:54	Saturn 2.8°S of Moon	
	20	17:45	Vernal Equinox		21	03:59	FIRST QUARTER MOON	
	20	21:19	Moon at Descending Node		23	03:20	Autumnal Equinox	
	21	17:13	Mars 1.0°N of Moon: Occn.		24	14:38	Mars 0.7°N of Regulus	
	22	14:51	Venus 2.8°N of Moon		27	16:04	Moon at Descending Node	
	25	01:55	Aldebaran 0.9°S of Moon		27	20:46	Moon at Perigee: 356877 km	
	27	02:43	FIRST QUARTER MOON		27	21:47	Total Lunar Eclipse;	
	30	05:19	Jupiter 5.6°N of Moon	mag=1.276				
	31	15:45	Regulus 4.0°N of Moon		27	21:50	FULL MOON	
					30	10	Mercury at Inferior	
Apr	01	07:59	Moon at Apogee: 406012 km	Conjunction				
	03	22:17	Moon at Ascending Node					
	04	07:00	Total Lunar Eclipse;		Oct	02	07:51	Aldebaran 0.5°S of Moon
mag=1.001						04	16:06	LAST QUARTER MOON
	04	07:06	FULL MOON			08	15:32	Venus 0.7°N of Moon: Occn.
	04	23:21	Spica 3.5°S of Moon			08	16:52	Regulus 3.3°N of Moon
	06	09	Uranus in Conjunction with			08	19:26	Venus 2.5°S of Regulus
Sun						09	11:51	Mars 3.4°N of Moon
	08	08:08	Saturn 2.2°S of Moon			09	18:30	Jupiter 2.7°N of Moon
	08	09:34	Jupiter 2.0°S of Beehive			11	05:54	Moon at Ascending Node
	09	23	Mercury at Superior			11	07:00	Mercury 1.0°N of Moon:
Conjunction				Occn.				
	11	10:28	Venus 2.5°S of Pleiades			11	08:17	Moon at Apogee: 406389 km
	11	22:44	LAST QUARTER MOON			11	22	Uranus at Opposition
	16	22:53	Moon at Perigee: 361026 km			12	13	Mercury at Perihelion
	17	08:07	Moon at Descending Node			12	19:06	NEW MOON
	18	08	Venus at Perihelion			15	22	Mercury at Greatest Elong:
	18	13:57	NEW MOON	18.1°W				
	19	14:24	Venus 7.2°N of Aldebaran			16	08:20	Saturn 3.0°S of Moon
	19	15	Mercury at Perihelion			20	15:31	FIRST QUARTER MOON
	21	11:35	Aldebaran 0.9°S of Moon			21	18	Orionid Meteor Shower
	22	14	Mercury 1.3° of Mars			25	02:36	Moon at Descending Node
	22	18	Lyrid Meteor Shower			26	02	Venus at Greatest Elong:
	25	18:55	FIRST QUARTER MOON	46.4°W				
	26	13:06	Jupiter 5.5°N of Moon			26	07:59	Moon at Perigee: 358464 km
	27	22:38	Regulus 4.0°N of Moon			27	07:05	FULL MOON
	28	22:55	Moon at Apogee: 405085 km			29	17:45	Aldebaran 0.6°S of Moon
	30	20:29	Mercury 1.6°S of Pleiades					
May	01	04:50	Moon at Ascending Node	Nov	03	07:24	LAST QUARTER MOON	
	02	06:10	Spica 3.5°S of Moon		04	23:19	Regulus 3.2°N of Moon	
	03	22:42	FULL MOON		05	18	S Taurid Meteor Shower	
	05	08	Eta-Aquarid Meteor Shower		06	10:49	Jupiter 2.3°N of Moon	
	05	11:19	Saturn 2.0°S of Moon		07	04:56	Mars 1.8°N of Moon	
	07	00	Mercury at Greatest Elong:		07	08:54	Venus 1.2°N of Moon	
21.2°E					07	10:53	Moon at Ascending Node	
	11	05:36	LAST QUARTER MOON		07	16:48	Moon at Apogee: 405724 km	
	14	15:37	Moon at Descending Node		09	07:27	Spica 4.3°S of Moon	
	14	19:23	Moon at Perigee: 366024 km		11	12:47	NEW MOON	
	17	23:13	NEW MOON		12	17	N Taurid Meteor Shower	
	19	01:51	Mercury 5.7°N of Moon		17	10	Mercury at Superior	
	22	20	Saturn at Opposition	Conjunction				
	24	02:03	Jupiter 5.1°N of Moon		18	00	Leonid Meteor Shower	
					19	01:27	FIRST QUARTER MOON	

2015 Calendar of Astronomical Events

January - June			July - December		
25	06:14	Regulus 3.8°N of Moon	20	19	Mars at Aphelion
25	12:19	FIRST QUARTER MOON	21	08:56	Moon at Descending Node
26	17:12	Moon at Apogee: 404246 km	23	15:06	Moon at Perigee: 362818 km
28	09:40	Moon at Ascending Node	25	17:44	FULL MOON
29	12:27	Venus 3.9°S of Pollux	26	04:33	Aldebaran 0.7°S of Moon
29	13:52	Spica 3.6°S of Moon	29	01	Venus at Perihelion
30	12	Mercury at Inferior	29	14:20	Venus 3.9°N of Spica
Conjunction			29	19	Saturn in Conjunction with
Sun			Sun		
Jun 01	15:02	Saturn 1.9°S of Moon	Dec 02	06:53	Regulus 3.0°N of Moon
02	11:19	FULL MOON	03	02:40	LAST QUARTER MOON
06	14	Venus at Greatest Elong:	04	01:21	Jupiter 1.8°N of Moon
45.4°E			04	13:33	Moon at Ascending Node
09	10:42	LAST QUARTER MOON	05	09:56	Moon at Apogee: 404800 km
09	23:39	Moon at Perigee: 369713 km	05	21:40	Mars 0.1°N of Moon: Occn.
10	18:30	Moon at Descending Node	06	14:42	Spica 4.4°S of Moon
13	03:59	Venus 0.5°N of Beehive	07	11:55	Venus 0.7°S of Moon: Occn.
14	10	Mars in Conjunction with	11	05:29	NEW MOON
Sun			14	13	Geminid Meteor Shower
14	21:26	Mercury 0.0°N of Moon:	18	01:01	Saturn 6.1°N of Antares
Occn.			18	10:13	Moon at Descending Node
16	09:05	NEW MOON	18	10:14	FIRST QUARTER MOON
20	06:28	Venus 5.8°N of Moon	21	03:53	Moon at Perigee: 368418 km
20	18:29	Jupiter 4.7°N of Moon	21	23:48	Winter Solstice
21	11:38	Summer Solstice	22	21	Ursid Meteor Shower
21	14:10	Regulus 3.6°N of Moon	23	09:18	Mars 3.3°N of Spica
23	04:37	Mercury 1.8°N of Aldebaran	23	14:09	Aldebaran 0.7°S of Moon
23	12:01	Moon at Apogee: 404134 km	25	06:11	FULL MOON
24	06:03	FIRST QUARTER MOON	28	22	Mercury at Greatest Elong:
24	12	Mercury at Greatest Elong:	19.7°E		
22.5°W			29	15:30	Regulus 2.7°N of Moon
24	12:23	Moon at Ascending Node	31	12:55	Jupiter 1.5°N of Moon
25	21:58	Spica 3.8°S of Moon	31	15:19	Moon at Ascending Node
28	20:27	Saturn 2.0°S of Moon			

ASTRONOMICAL DEFINITIONS

- Perihelion - the instant when a planet is closest to the Sun
- Aphelion - the instant when a planet is furthest from the Sun
- Perigee - the instant when the Moon is closest to Earth
- Apogee - the instant when the Moon is furthest from Earth
- Inferior Conjunction - the instant when a planet passes between Earth and the Sun (Mercury or Venus)
- Superior Conjunction - the instant when a planet passes on the opposite side of the Sun from Earth (Mercury or Venus)
- Greatest Elongation - elongation is the apparent angle between a planet and the Sun as seen from Earth; during eastern elongation (E), the planet appears as an evening star; during western elongation (W), the planet appears as a morning star
- Opposition - the instant when a planet appears opposite the Sun as seen from Earth
- Conjunction - the instant when a planet appears closest the Sun as seen from Earth
- Occultation - the Moon occults or eclipses a star or planet

- Ascending Node - the point where a planet crosses from the southern to northern portion of its orbit
- Descending Node - the point where a planet crosses from the northern to the southern portion of its orbit

CALENDARS FOR OTHER YEARS AND TIME ZONES

The table below contains links to astronomical events calendars for a range of years and [Time Zones](#). Abbreviations for the time zones are: GMT = Greenwich Mean Time, AST = Atlantic Standard Time, EST = Eastern Standard Time, CST = Central Standard Time, MST = Mountain Standard Time, PST = Pacific Standard Time, AKST = Alaskan Standard Time, and HST = Hawaiian Standard Time.

Calendar of Astronomical Events															
GMT	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
AST	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
EST	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
CST	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
MST	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
PST	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
AKST	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
HST	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025

For years or time zones not covered above, please visit [SKYCAL](#) the astronomical events calendar generator.

ACCURACY

The times of astronomical events listed with a precision in hours and minutes (i.e., *hh:mm*) are accurate to the nearest minute. Similarly, the times of astronomical events listed with a precision in hours (i.e., *hh*) are accurate to the nearest hour.

A simplified solar ephemeris results an accuracy of ± 0.5 hours for the perihelion and aphelion of Earth. The algorithm used in the perihelion and aphelion of the other planets

is based on unperturbed elliptical orbits. For Mars, the accuracy is about 2 hours. Due to mutual planetary perturbations, the times for Jupiter may be in error by several weeks, while Saturn's times may be in error by a month. The times for Uranus and Neptune may be in error by several months. In the future, we plan to develop algorithms to improve the computed times of perihelion and aphelion of the planets.

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