

I slightly modified Thorstensen's code to print out the time between evening twilight and morning twilight. For Okie-Tex site (site code = o) near Kenton OK I used same time zone as for Oklahoma City.

W. Romanishin- August 2013 - email: wromanishin at ou.edu - Here is stuff from John T. intro:

\*\*\*\*\* 2023 Night-time Astronomical Calendar for OU Norman \*\*\*\*\*

By John Thorstensen, Dartmouth College

This calendar is designed to provide information useful for the planning of nighttime observations. The format should minimize confusion; each line gives the phenomena for a single (local!) night, and each line is labeled with both evening and morning (local) day and date. Note that all times given are LOCAL CIVIL (zone) times. DAYLIGHT SAVINGS time is used using conventions for the USA; for 2007+, 2nd Sunday in March to first Sunday in November.

The rise/set times printed are the times at which the center of the object is 50 arcminutes below the geometrical horizon. At the given twilight, the center of the sun is 0.0 degrees below the geometrical horizon.

The moon positions (and rise/set times) are generated by an implementation of the Low-Precision formulae in the Astronomical Almanac. The Almanac states that the error seldom exceeds 0.3 degrees. Topocentric corrections are included. Comparisons with tables for Kitt Peak in the NOAO Newsletter indicate that the rise-set times are good to +/- 2 min or so. The moon's RA, Dec, and illuminated fraction are given for local midnight, regardless of whether the moon is actually up at that time. Note that the moonrise and moonset times are not printed if they occur near mid-day.

The LST at evening and morning twilight are tabulated. This gives an accurate idea of the range of RA's accessible during the night.

The JD is given (severely rounded off) for local midnight. Again, this avoids any ambiguity.

Some credits: The sidereal time and Julian date routines were originally coded in PL/I by Steve Maker of Dartmouth College. The algorithms originated in the old American Ephemeris. The routine to convert JD back to calendar date is adapted from Numerical Recipes in C, by Press et al.

CAUTIONS: I believe that the program which generates these tables is reasonably accurate. However, it has not been exhaustively tested, so you should be sure to run 'sanity checks' on the results. Also, in view of the approximations used, the results should not be used when high precision is needed. Extension to dates far from the present (1990) should be done with great caution. The code has not been tested for the eastern or southern hemispheres. Rise/set times are slightly inaccurate and rather confusing at circumpolar latitudes, where the concept of a 'night' is blurry.

The daylight savings time conventions (if used) are quite specific (to U. S., post-1986) and subject to change. I know that the code has many infelicities; if you should find actual errors, please notify John.Thorstensen@dartmouth.edu

[This output comes from a (hopefully) portable, completely self-contained program in the c language. It is available from the author and may be used freely for scientific or educational purposes. If you use it for profit, please contact the author to arrange a (modest!) fee. Source code is copyright John Thorstensen, 1990.]

MOON PHASES FOR 2023, at OU Norman

Times and dates are given in local time, zone = 6 hr West.  
 They are generally better than +- 2 minutes.  
 Daylight savings time used.

The end of the previous year and the beginning of the next  
 are included for continuity.

NEW		1ST		FULL		LAST	
Dec 23	4 18	Dec 29	19 23	Jan 06	17 10	Jan 14	20 13
Jan 21	14 56	Jan 28	9 20	Feb 05	12 31	Feb 13	10 03
Feb 20	1 09	Feb 27	2 07	Mar 07	6 43	Mar 14	21 10
Mar 21	12 27	Mar 28	21 33	Apr 05	23 37	Apr 13	4 13
Apr 19	23 16	Apr 27	16 21	May 05	12 37	May 12	9 29
May 19	10 56	May 27	10 24	Jun 03	22 44	Jun 10	14 32
Jun 17	23 39	Jun 26	2 51	Jul 03	6 41	Jul 09	20 49
Jul 17	13 33	Jul 25	17 08	Aug 01	13 33	Aug 08	5 30
Aug 16	4 39	Aug 24	4 58	Aug 30	20 37	Sep 06	17 23
Sep 14	20 40	Sep 22	14 33	Sep 29	4 58	Oct 06	8 49
Oct 14	12 55	Oct 21	22 30	Oct 28	15 24	Nov 05	2 39
Nov 13	3 27	Nov 20	4 51	Nov 27	3 17	Dec 04	23 52
Dec 12	17 32	Dec 19	12 40	Dec 26	18 34	Jan 03	21 33

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2  
 Rise/set times in Central time ( 6 hr W), uncorrected for elevation, DAYLIGHT time used, \* shows clock reset.  
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

\*\*\*\*\* 2023 JANUARY \*\*\*\*\*

Date (eve/morn)		LMST	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi	
		midn	set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Sun Jan 01/Mon Jan 02		6 17	17 29	18 59	6 08	7 38	1 15	12 26	.....	3 53	80	3 04.5	17 52	11.1
Mon Jan 02/Tue Jan 03		6 21	17 29	19 00	6 08	7 39	1 20	12 30	.....	4 54	87	3 54.8	21 56	11.1
Tue Jan 03/Wed Jan 04		6 25	17 30	19 01	6 08	7 39	1 24	12 34	.....	5 55	93	4 47.1	24 57	11.1
Wed Jan 04/Thu Jan 05		6 29	17 31	19 01	6 08	7 39	1 29	12 38	15 34	6 52	97	5 40.9	26 46	11.1
Thu Jan 05/Fri Jan 06		6 32	17 32	19 02	6 09	7 39	1 34	12 42	16 22	7 44	99	6 35.4	27 17	11.1
Fri Jan 06/Sat Jan 07		6 36	17 33	19 03	6 09	7 39	1 38	12 46	17 15	8 30	100	7 29.4	26 28	11.1
Sat Jan 07/Sun Jan 08		6 40	17 33	19 04	6 09	7 39	1 43	12 50	18 11	.....	98	8 21.8	24 26	11.1
Sun Jan 08/Mon Jan 09		6 44	17 34	19 04	6 09	7 39	1 48	12 54	19 10	.....	95	9 12.0	21 18	11.1
Mon Jan 09/Tue Jan 10		6 48	17 35	19 05	6 09	7 39	1 53	12 58	20 09	.....	90	9 59.9	17 16	11.1
Tue Jan 10/Wed Jan 11		6 52	17 36	19 06	6 09	7 39	1 57	13 02	21 07	.....	84	10 45.6	12 33	11.0
Wed Jan 11/Thu Jan 12		6 56	17 37	19 07	6 09	7 38	2 02	13 06	22 05	.....	76	11 29.9	7 19	11.0
Thu Jan 12/Fri Jan 13		7 00	17 38	19 08	6 09	7 38	2 07	13 10	23 02	.....	67	12 13.7	1 44	11.0
Fri Jan 13/Sat Jan 14		7 04	17 39	19 08	6 09	7 38	2 12	13 14	0 01	.....	58	12 58.0	- 4 00	11.0
Sat Jan 14/Sun Jan 15		7 08	17 40	19 09	6 09	7 38	2 16	13 18	1 02	.....	48	13 43.9	- 9 43	11.0
Sun Jan 15/Mon Jan 16		7 12	17 41	19 10	6 08	7 38	2 21	13 21	2 07	.....	37	14 32.6	-15 11	11.0
Mon Jan 16/Tue Jan 17		7 16	17 42	19 11	6 08	7 37	2 26	13 25	3 15	.....	27	15 25.3	-20 06	11.0
Tue Jan 17/Wed Jan 18		7 20	17 43	19 12	6 08	7 37	2 31	13 29	4 27	.....	18	16 22.9	-24 06	10.9
Wed Jan 18/Thu Jan 19		7 24	17 44	19 13	6 08	7 37	2 36	13 33	5 39	.....	10	17 25.4	-26 44	10.9
Thu Jan 19/Fri Jan 20		7 28	17 45	19 14	6 08	7 36	2 40	13 36	6 48	.....	4	18 31.4	-27 36	10.9
Fri Jan 20/Sat Jan 21		7 32	17 46	19 14	6 07	7 36	2 45	13 40	7 47	16 21	1	19 38.4	-26 30	10.9
Sat Jan 21/Sun Jan 22		7 36	17 47	19 15	6 07	7 35	2 50	13 43	.....	17 38	0	20 43.6	-23 28	10.9
Sun Jan 22/Mon Jan 23		7 40	17 48	19 16	6 07	7 35	2 55	13 47	.....	18 56	3	21 45.0	-18 52	10.8
Mon Jan 23/Tue Jan 24		7 43	17 49	19 17	6 06	7 34	3 00	13 51	.....	20 12	8	22 42.0	-13 10	10.8
Tue Jan 24/Wed Jan 25		7 47	17 50	19 18	6 06	7 34	3 05	13 54	.....	21 24	16	23 35.1	- 6 53	10.8
Wed Jan 25/Thu Jan 26		7 51	17 51	19 19	6 05	7 33	3 09	13 58	.....	22 33	25	0 25.3	- 0 26	10.8
Thu Jan 26/Fri Jan 27		7 55	17 52	19 20	6 05	7 32	3 14	14 01	.....	23 38	35	1 14.0	5 51	10.8
Fri Jan 27/Sat Jan 28		7 59	17 53	19 21	6 04	7 32	3 19	14 05	.....	0 43	45	2 02.3	11 41	10.7
Sat Jan 28/Sun Jan 29		8 03	17 54	19 21	6 04	7 31	3 24	14 08	.....	1 46	55	2 51.1	16 51	10.7
Sun Jan 29/Mon Jan 30		8 07	17 55	19 22	6 03	7 30	3 29	14 11	.....	2 48	65	3 41.2	21 09	10.7
Mon Jan 30/Tue Jan 31		8 11	17 56	19 23	6 03	7 30	3 33	14 15	.....	3 49	74	4 32.9	24 26	10.7
Tue Jan 31/Wed Feb 01		8 15	17 57	19 24	6 02	7 29	3 38	14 18	.....	4 47	82	5 26.2	26 32	10.6

\*\*\*\*\* 2023 FEBRUARY \*\*\*\*\*

Date (eve/morn)		LMST	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi	
		midn	set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Wed Feb 01/Thu Feb 02		8 19	17 58	19 25	6 01	7 28	3 43	14 21	.....	5 40	89	6 20.3	27 21	10.6
Thu Feb 02/Fri Feb 03		8 23	17 59	19 26	6 01	7 27	3 48	14 25	.....	6 28	94	7 14.3	26 51	10.6
Fri Feb 03/Sat Feb 04		8 27	18 00	19 27	6 00	7 27	3 53	14 28	16 05	7 09	98	8 07.1	25 06	10.6
Sat Feb 04/Sun Feb 05		8 31	18 01	19 28	5 59	7 26	3 58	14 31	17 03	7 45	100	8 58.0	22 12	10.5
Sun Feb 05/Mon Feb 06		8 35	18 02	19 29	5 59	7 25	4 02	14 34	18 02	.....	100	9 46.6	18 20	10.5
Mon Feb 06/Tue Feb 07		8 39	18 03	19 29	5 58	7 24	4 07	14 38	19 01	.....	98	10 33.2	13 42	10.5
Tue Feb 07/Wed Feb 08		8 43	18 04	19 30	5 57	7 23	4 12	14 41	19 59	.....	94	11 18.1	8 30	10.4
Wed Feb 08/Thu Feb 09		8 47	18 05	19 31	5 56	7 22	4 17	14 44	20 57	.....	89	12 02.1	2 56	10.4
Thu Feb 09/Fri Feb 10		8 50	18 06	19 32	5 55	7 21	4 22	14 47	21 55	.....	82	12 46.1	- 2 49	10.4
Fri Feb 10/Sat Feb 11		8 54	18 07	19 33	5 55	7 20	4 27	14 50	22 54	.....	73	13 31.2	- 8 33	10.4
Sat Feb 11/Sun Feb 12		8 58	18 08	19 34	5 54	7 19	4 31	14 53	23 56	.....	64	14 18.4	-14 03	10.3
Sun Feb 12/Mon Feb 13		9 02	18 09	19 35	5 53	7 18	4 36	14 56	1 01	.....	54	15 08.8	-19 03	10.3
Mon Feb 13/Tue Feb 14		9 06	18 10	19 36	5 52	7 17	4 41	14 59	2 10	.....	43	16 03.3	-23 15	10.3
Tue Feb 14/Wed Feb 15		9 10	18 11	19 36	5 51	7 16	4 46	15 02	3 19	.....	32	17 02.4	-26 17	10.2
Wed Feb 15/Thu Feb 16		9 14	18 12	19 37	5 50	7 15	4 51	15 05	4 28	.....	22	18 05.4	-27 46	10.2
Thu Feb 16/Fri Feb 17		9 18	18 13	19 38	5 49	7 14	4 56	15 08	5 30	.....	13	19 10.7	-27 25	10.2
Fri Feb 17/Sat Feb 18		9 22	18 14	19 39	5 48	7 13	5 00	15 11	6 23	.....	6	20 15.6	-25 10	10.1
Sat Feb 18/Sun Feb 19		9 26	18 15	19 40	5 47	7 12	5 05	15 14	7 08	16 25	2	21 18.1	-21 11	10.1
Sun Feb 19/Mon Feb 20		9 30	18 16	19 41	5 46	7 11	5 10	15 17	7 45	17 43	0	22 17.0	-15 52	10.1
Mon Feb 20/Tue Feb 21		9 34	18 17	19 42	5 45	7 09	5 15	15 20	.....	18 58	1	23 12.2	- 9 39	10.1
Tue Feb 21/Wed Feb 22		9 38	18 18	19 43	5 44	7 08	5 20	15 22	.....	20 10	5	0 04.5	- 3 03	10.0
Wed Feb 22/Thu Feb 23		9 42	18 19	19 43	5 42	7 07	5 24	15 25	.....	21 19	12	0 54.8	3 32	10.0
Thu Feb 23/Fri Feb 24		9 46	18 20	19 44	5 41	7 06	5 29	15 28	.....	22 26	19	1 44.5	9 46	10.0
Fri Feb 24/Sat Feb 25		9 50	18 21	19 45	5 40	7 05	5 34	15 31	.....	23 32	29	2 34.3	15 20	9.9
Sat Feb 25/Sun Feb 26		9 54	18 22	19 46	5 39	7 03	5 39	15 33	.....	0 37	38	3 25.0	20 03	9.9
Sun Feb 26/Mon Feb 27		9 58	18 22	19 47	5 38	7 02	5 44	15 36	.....	1 40	48	4 17.1	23 43	9.8
Mon Feb 27/Tue Feb 28		10 01	18 23	19 48	5 37	7 01	5 49	15 39	.....	2 41	58	5 10.4	26 11	9.8
Tue Feb 28/Wed Mar 01		10 05	18 24	19 49	5 35	7 00	5 53	15 42	.....	3 36	68	6 04.6	27 21	9.8

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2  
 Rise/set times in Central time ( 6 hr W), uncorrected for elevation, DAYLIGHT time used, \* shows clock reset.  
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

\*\*\*\*\* 2023 MARCH \*\*\*\*\*

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Wed Mar 01/Thu Mar 02	10 09	18 25	19 50	5 34	6 58	5 58	15 44	.....	4 26	76	6 58.7	27 12	9.7
Thu Mar 02/Fri Mar 03	10 13	18 26	19 50	5 33	6 57	6 03	15 47	.....	5 09	84	7 51.8	25 46	9.7
Fri Mar 03/Sat Mar 04	10 17	18 27	19 51	5 31	6 56	6 08	15 50	.....	5 46	90	8 43.1	23 09	9.7
Sat Mar 04/Sun Mar 05	10 21	18 28	19 52	5 30	6 54	6 13	15 52	.....	6 18	95	9 32.4	19 31	9.6
Sun Mar 05/Mon Mar 06	10 25	18 29	19 53	5 29	6 53	6 17	15 55	16 54	6 46	98	10 19.6	15 01	9.6
Mon Mar 06/Tue Mar 07	10 29	18 30	19 54	5 27	6 52	6 22	15 57	17 52	7 12	100	11 05.1	9 53	9.6
Tue Mar 07/Wed Mar 08	10 33	18 30	19 55	5 26	6 50	6 27	16 00	18 51	7 36	99	11 49.7	4 17	9.5
Wed Mar 08/Thu Mar 09	10 37	18 31	19 56	5 25	6 49	6 32	16 03	19 49	.....	97	12 34.1	- 1 33	9.5
Thu Mar 09/Fri Mar 10	10 41	18 32	19 56	5 23	6 48	6 37	16 05	20 49	.....	93	13 19.4	- 7 24	9.4
Fri Mar 10/Sat Mar 11	10 45	18 33	19 57	5 22	6 46	6 42	16 08	21 50	.....	86	14 06.4	-13 04	9.4
Sat Mar 11/Sun Mar 12*	10 49	18 34	19 58	6 21	7 45	6 46	16 10	22 54	.....	78	14 56.1	-18 16	9.4
Sun Mar 12/Mon Mar 13	9 53	19 35	20 59	6 19	7 43	6 51	16 13	1 01	.....	69	15 47.3	-22 26	9.3
Mon Mar 13/Tue Mar 14	9 56	19 36	21 00	6 18	7 42	6 56	16 15	2 09	.....	59	16 44.2	-25 48	9.3
Tue Mar 14/Wed Mar 15	10 00	19 36	21 01	6 16	7 41	7 01	16 18	3 16	.....	48	17 44.7	-27 44	9.3
Wed Mar 15/Thu Mar 16	10 04	19 37	21 02	6 15	7 39	7 06	16 20	4 19	.....	37	18 47.6	-28 00	9.2
Thu Mar 16/Fri Mar 17	10 08	19 38	21 03	6 13	7 38	7 10	16 23	5 14	.....	26	19 50.8	-26 28	9.2
Fri Mar 17/Sat Mar 18	10 12	19 39	21 04	6 12	7 36	7 15	16 25	6 00	.....	17	20 52.5	-23 13	9.1
Sat Mar 18/Sun Mar 19	10 16	19 40	21 04	6 10	7 35	7 20	16 28	6 39	.....	9	21 51.2	-18 31	9.1
Sun Mar 19/Mon Mar 20	10 20	19 41	21 05	6 09	7 34	7 25	16 30	7 13	17 32	3	22 46.8	-12 44	9.1
Mon Mar 20/Tue Mar 21	10 24	19 41	21 06	6 07	7 32	7 30	16 33	.....	18 45	1	23 39.7	- 6 17	9.0
Tue Mar 21/Wed Mar 22	10 28	19 42	21 07	6 06	7 31	7 35	16 35	.....	19 55	0	0 30.8	0 24	9.0
Wed Mar 22/Thu Mar 23	10 32	19 43	21 08	6 04	7 29	7 40	16 37	.....	21 04	3	1 21.1	6 56	8.9
Thu Mar 23/Fri Mar 24	10 36	19 44	21 09	6 03	7 28	7 44	16 40	.....	22 12	7	2 11.5	12 59	8.9
Fri Mar 24/Sat Mar 25	10 40	19 45	21 10	6 01	7 27	7 49	16 42	.....	23 19	14	3 02.8	18 14	8.9
Sat Mar 25/Sun Mar 26	10 44	19 45	21 11	6 00	7 25	7 54	16 45	.....	0 25	22	3 55.5	22 28	8.8
Sun Mar 26/Mon Mar 27	10 48	19 46	21 12	5 58	7 24	7 59	16 47	.....	1 29	31	4 49.6	25 30	8.8
Mon Mar 27/Tue Mar 28	10 52	19 47	21 13	5 57	7 22	8 04	16 49	.....	2 28	41	5 44.5	27 12	8.7
Tue Mar 28/Wed Mar 29	10 56	19 48	21 14	5 55	7 21	8 09	16 52	.....	3 20	50	6 39.3	27 31	8.7
Wed Mar 29/Thu Mar 30	11 00	19 49	21 15	5 54	7 20	8 14	16 54	.....	4 06	60	7 33.2	26 31	8.6
Thu Mar 30/Fri Mar 31	11 04	19 50	21 16	5 52	7 18	8 19	16 57	.....	4 46	69	8 25.3	24 17	8.6
Fri Mar 31/Sat Apr 01	11 07	19 50	21 17	5 51	7 17	8 24	16 59	.....	5 19	78	9 15.2	20 58	8.6

\*\*\*\*\* 2023 APRIL \*\*\*\*\*

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Sat Apr 01/Sun Apr 02	11 11	19 51	21 18	5 49	7 15	8 29	17 01	.....	5 49	85	10 02.9	16 44	8.5
Sun Apr 02/Mon Apr 03	11 15	19 52	21 19	5 47	7 14	8 33	17 04	.....	6 15	91	10 49.0	11 47	8.5
Mon Apr 03/Tue Apr 04	11 19	19 53	21 20	5 46	7 13	8 38	17 06	17 41	6 40	96	11 33.9	6 17	8.4
Tue Apr 04/Wed Apr 05	11 23	19 54	21 21	5 44	7 11	8 43	17 08	18 40	7 04	99	12 18.6	0 26	8.4
Wed Apr 05/Thu Apr 06	11 27	19 54	21 22	5 43	7 10	8 48	17 11	19 40	.....	100	13 04.0	- 5 33	8.4
Thu Apr 06/Fri Apr 07	11 31	19 55	21 23	5 41	7 08	8 53	17 13	20 41	.....	99	13 51.0	-11 26	8.3
Fri Apr 07/Sat Apr 08	11 35	19 56	21 24	5 40	7 07	8 58	17 16	21 45	.....	95	14 40.7	-16 55	8.3
Sat Apr 08/Sun Apr 09	11 39	19 57	21 25	5 38	7 06	9 03	17 18	22 53	.....	90	15 33.8	-21 42	8.2
Sun Apr 09/Mon Apr 10	11 43	19 58	21 26	5 36	7 04	9 08	17 20	0 01	.....	82	16 30.7	-25 24	8.2
Mon Apr 10/Tue Apr 11	11 47	19 58	21 27	5 35	7 03	9 13	17 23	1 10	.....	73	17 31.1	-27 43	8.1
Tue Apr 11/Wed Apr 12	11 51	19 59	21 28	5 33	7 02	9 18	17 25	2 13	.....	63	18 33.6	-28 22	8.1
Wed Apr 12/Thu Apr 13	11 55	20 00	21 29	5 32	7 00	9 23	17 27	3 10	.....	51	19 36.4	-27 15	8.0
Thu Apr 13/Fri Apr 14	11 59	20 01	21 30	5 30	6 59	9 28	17 30	3 58	.....	40	20 37.4	-24 27	8.0
Fri Apr 14/Sat Apr 15	12 03	20 02	21 31	5 29	6 58	9 33	17 32	4 38	.....	29	21 35.5	-20 11	8.0
Sat Apr 15/Sun Apr 16	12 07	20 02	21 32	5 27	6 57	9 38	17 35	5 12	.....	19	22 30.4	-14 48	7.9
Sun Apr 16/Mon Apr 17	12 11	20 03	21 33	5 25	6 55	9 43	17 37	5 42	.....	11	23 22.5	- 8 41	7.9
Mon Apr 17/Tue Apr 18	12 14	20 04	21 34	5 24	6 54	9 48	17 39	6 11	17 35	5	0 12.8	- 2 11	7.8
Tue Apr 18/Wed Apr 19	12 18	20 05	21 35	5 22	6 53	9 53	17 42	6 39	18 44	1	1 02.3	4 21	7.8
Wed Apr 19/Thu Apr 20	12 22	20 06	21 36	5 21	6 51	9 58	17 44	.....	19 51	0	1 52.0	10 34	7.7
Thu Apr 20/Fri Apr 21	12 26	20 06	21 37	5 19	6 50	10 03	17 47	.....	20 59	1	2 42.8	16 10	7.7
Fri Apr 21/Sat Apr 22	12 30	20 07	21 39	5 18	6 49	10 08	17 49	.....	22 06	5	3 35.1	20 51	7.7
Sat Apr 22/Sun Apr 23	12 34	20 08	21 40	5 16	6 48	10 13	17 51	.....	23 12	10	4 29.1	24 24	7.6
Sun Apr 23/Mon Apr 24	12 38	20 09	21 41	5 15	6 47	10 19	17 54	.....	0 15	17	5 24.3	26 38	7.6
Mon Apr 24/Tue Apr 25	12 42	20 10	21 42	5 13	6 45	10 24	17 56	.....	1 11	25	6 19.8	27 28	7.5
Tue Apr 25/Wed Apr 26	12 46	20 11	21 43	5 12	6 44	10 29	17 59	.....	2 01	34	7 14.5	26 55	7.5
Wed Apr 26/Thu Apr 27	12 50	20 11	21 44	5 10	6 43	10 34	18 01	.....	2 43	43	8 07.4	25 05	7.4
Thu Apr 27/Fri Apr 28	12 54	20 12	21 45	5 09	6 42	10 39	18 04	.....	3 19	53	8 57.9	22 07	7.4
Fri Apr 28/Sat Apr 29	12 58	20 13	21 46	5 08	6 41	10 44	18 06	.....	3 50	62	9 46.1	18 12	7.4
Sat Apr 29/Sun Apr 30	13 02	20 14	21 48	5 06	6 40	10 49	18 09	.....	4 17	71	10 32.3	13 31	7.3
Sun Apr 30/Mon May 01	13 06	20 15	21 49	5 05	6 39	10 54	18 11	.....	4 42	80	11 17.3	8 13	7.3

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2  
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\*\*\*\*\* 2023 MAY \*\*\*\*\*

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Mon May 01/Tue May 02	13 10	20 16	21 50	5 03	6 38	10 59	18 14	.....	5 06	87	12 01.7	2 30	7.2
Tue May 02/Wed May 03	13 14	20 16	21 51	5 02	6 37	11 04	18 16	17 26	5 30	93	12 46.8	- 3 29	7.2
Wed May 03/Thu May 04	13 18	20 17	21 52	5 01	6 36	11 09	18 19	18 27	5 57	97	13 33.4	- 9 29	7.1
Thu May 04/Fri May 05	13 21	20 18	21 53	4 59	6 35	11 15	18 22	19 31	6 26	100	14 22.8	-15 14	7.1
Fri May 05/Sat May 06	13 25	20 19	21 55	4 58	6 34	11 20	18 24	20 39	.....	100	15 15.8	-20 24	7.1
Sat May 06/Sun May 07	13 29	20 20	21 56	4 57	6 33	11 25	18 27	21 49	.....	97	16 13.0	-24 36	7.0
Sun May 07/Mon May 08	13 33	20 20	21 57	4 55	6 32	11 30	18 29	22 59	.....	92	17 14.2	-27 25	7.0
Mon May 08/Tue May 09	13 37	20 21	21 58	4 54	6 31	11 35	18 32	0 06	.....	85	18 18.0	-28 33	6.9
Tue May 09/Wed May 10	13 41	20 22	21 59	4 53	6 30	11 40	18 35	1 06	.....	76	19 22.2	-27 50	6.9
Wed May 10/Thu May 11	13 45	20 23	22 00	4 52	6 29	11 45	18 37	1 57	.....	65	20 24.6	-25 21	6.9
Thu May 11/Fri May 12	13 49	20 24	22 02	4 50	6 28	11 50	18 40	2 39	.....	54	21 23.6	-21 21	6.8
Fri May 12/Sat May 13	13 53	20 24	22 03	4 49	6 27	11 56	18 43	3 14	.....	43	22 18.8	-16 13	6.8
Sat May 13/Sun May 14	13 57	20 25	22 04	4 48	6 27	12 01	18 46	3 45	.....	32	23 10.7	-10 19	6.7
Sun May 14/Mon May 15	14 01	20 26	22 05	4 47	6 26	12 06	18 49	4 13	.....	22	0 00.3	- 4 00	6.7
Mon May 15/Tue May 16	14 05	20 27	22 06	4 46	6 25	12 11	18 51	4 40	.....	13	0 48.8	2 24	6.7
Tue May 16/Wed May 17	14 09	20 28	22 07	4 45	6 24	12 16	18 54	5 08	17 37	7	1 37.2	8 36	6.6
Wed May 17/Thu May 18	14 13	20 28	22 09	4 44	6 24	12 21	18 57	5 38	18 43	2	2 26.6	14 18	6.6
Thu May 18/Fri May 19	14 17	20 29	22 10	4 43	6 23	12 26	19 00	6 12	19 50	0	3 17.7	19 14	6.5
Fri May 19/Sat May 20	14 21	20 30	22 11	4 42	6 22	12 31	19 03	.....	20 56	0	4 10.7	23 09	6.5
Sat May 20/Sun May 21	14 25	20 31	22 12	4 41	6 22	12 36	19 06	.....	22 00	2	5 05.4	25 49	6.5
Sun May 21/Mon May 22	14 29	20 31	22 13	4 40	6 21	12 41	19 09	.....	23 00	6	6 00.9	27 08	6.4
Mon May 22/Tue May 23	14 32	20 32	22 14	4 39	6 21	12 46	19 12	.....	23 53	12	6 56.0	27 02	6.4
Tue May 23/Wed May 24	14 36	20 33	22 15	4 38	6 20	12 51	19 15	.....	0 38	19	7 49.6	25 37	6.4
Wed May 24/Thu May 25	14 40	20 34	22 16	4 37	6 19	12 56	19 18	.....	1 17	27	8 40.9	23 01	6.3
Thu May 25/Fri May 26	14 44	20 34	22 17	4 36	6 19	13 01	19 21	.....	1 49	36	9 29.5	19 25	6.3
Fri May 26/Sat May 27	14 48	20 35	22 18	4 35	6 19	13 06	19 24	.....	2 18	45	10 15.9	15 02	6.3
Sat May 27/Sun May 28	14 52	20 36	22 19	4 35	6 18	13 11	19 27	.....	2 43	55	11 00.6	10 00	6.3
Sun May 28/Mon May 29	14 56	20 36	22 20	4 34	6 18	13 16	19 31	.....	3 07	65	11 44.5	4 29	6.2
Mon May 29/Tue May 30	15 00	20 37	22 21	4 33	6 17	13 21	19 34	.....	3 31	74	12 28.6	- 1 19	6.2
Tue May 30/Wed May 31	15 04	20 38	22 22	4 33	6 17	13 26	19 37	.....	3 56	82	13 14.0	- 7 16	6.2
Wed May 31/Thu Jun 01	15 08	20 38	22 23	4 32	6 17	13 31	19 41	.....	4 24	90	14 01.9	-13 06	6.1

\*\*\*\*\* 2023 JUNE \*\*\*\*\*

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twi-Twi	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Thu Jun 01/Fri Jun 02	15 12	20 39	22 24	4 31	6 16	13 36	19 44	18 19	4 56	95	14 53.4	-18 33	6.1
Fri Jun 02/Sat Jun 03	15 16	20 40	22 25	4 31	6 16	13 40	19 47	19 29	5 34	99	15 49.6	-23 13	6.1
Sat Jun 03/Sun Jun 04	15 20	20 40	22 26	4 30	6 16	13 45	19 51	20 41	6 22	100	16 50.6	-26 40	6.1
Sun Jun 04/Mon Jun 05	15 24	20 41	22 26	4 30	6 16	13 50	19 54	21 51	.....	98	17 55.4	-28 28	6.1
Mon Jun 05/Tue Jun 06	15 28	20 41	22 27	4 29	6 15	13 55	19 58	22 56	.....	94	19 01.9	-28 20	6.0
Tue Jun 06/Wed Jun 07	15 32	20 42	22 28	4 29	6 15	13 59	20 01	23 52	.....	87	20 07.2	-26 16	6.0
Wed Jun 07/Thu Jun 08	15 36	20 42	22 29	4 29	6 15	14 04	20 05	0 38	.....	78	21 09.0	-22 31	6.0
Thu Jun 08/Fri Jun 09	15 39	20 43	22 29	4 28	6 15	14 09	20 09	1 16	.....	68	22 06.4	-17 30	6.0
Fri Jun 09/Sat Jun 10	15 43	20 43	22 30	4 28	6 15	14 13	20 12	1 48	.....	56	22 59.8	-11 38	6.0
Sat Jun 10/Sun Jun 11	15 47	20 44	22 31	4 28	6 15	14 18	20 16	2 17	.....	45	23 50.1	- 5 20	6.0
Sun Jun 11/Mon Jun 12	15 51	20 44	22 31	4 28	6 15	14 22	20 20	2 44	.....	34	0 38.6	1 03	5.9
Mon Jun 12/Tue Jun 13	15 55	20 45	22 32	4 28	6 15	14 27	20 24	3 11	.....	24	1 26.5	7 15	5.9
Tue Jun 13/Wed Jun 14	15 59	20 45	22 32	4 27	6 15	14 31	20 27	3 40	.....	16	2 15.0	12 59	5.9
Wed Jun 14/Thu Jun 15	16 03	20 46	22 33	4 27	6 15	14 36	20 31	4 12	17 39	9	3 04.8	18 02	5.9
Thu Jun 15/Fri Jun 16	16 07	20 46	22 33	4 27	6 15	14 40	20 35	4 48	18 45	4	3 56.5	22 08	5.9
Fri Jun 16/Sat Jun 17	16 11	20 46	22 34	4 27	6 15	14 45	20 39	5 30	19 49	1	4 50.1	25 05	5.9
Sat Jun 17/Sun Jun 18	16 15	20 47	22 34	4 28	6 15	14 49	20 43	6 18	20 50	0	5 44.9	26 44	5.9
Sun Jun 18/Mon Jun 19	16 19	20 47	22 34	4 28	6 15	14 53	20 47	.....	21 45	1	6 39.8	27 01	5.9
Mon Jun 19/Tue Jun 20	16 23	20 47	22 35	4 28	6 15	14 57	20 51	.....	22 33	4	7 33.7	25 58	5.9
Tue Jun 20/Wed Jun 21	16 27	20 47	22 35	4 28	6 16	15 02	20 55	.....	23 14	8	8 25.5	23 41	5.9
Wed Jun 21/Thu Jun 22	16 31	20 48	22 35	4 28	6 16	15 06	21 00	.....	23 49	14	9 14.7	20 22	5.9
Thu Jun 22/Fri Jun 23	16 35	20 48	22 35	4 28	6 16	15 10	21 04	.....	0 19	22	10 01.3	16 13	5.9
Fri Jun 23/Sat Jun 24	16 39	20 48	22 36	4 29	6 16	15 14	21 08	.....	0 45	30	10 45.9	11 24	5.9
Sat Jun 24/Sun Jun 25	16 43	20 48	22 36	4 29	6 17	15 18	21 12	.....	1 09	39	11 29.3	6 07	5.9
Sun Jun 25/Mon Jun 26	16 47	20 48	22 36	4 29	6 17	15 22	21 17	.....	1 33	48	12 12.3	0 31	5.9
Mon Jun 26/Tue Jun 27	16 50	20 48	22 36	4 30	6 17	15 26	21 21	.....	1 56	58	12 56.1	- 5 16	5.9
Tue Jun 27/Wed Jun 28	16 54	20 48	22 36	4 30	6 18	15 30	21 25	.....	2 22	68	13 41.9	-11 02	5.9
Wed Jun 28/Thu Jun 29	16 58	20 48	22 36	4 31	6 18	15 34	21 30	.....	2 51	78	14 30.8	-16 33	5.9
Thu Jun 29/Fri Jun 30	17 02	20 48	22 35	4 31	6 18	15 38	21 34	.....	3 26	86	15 24.2	-21 30	5.9
Fri Jun 30/Sat Jul 01	17 06	20 48	22 35	4 32	6 19	15 41	21 39	18 17	4 09	93	16 22.8	-25 29	5.9

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2  
 Rise/set times in Central time ( 6 hr W), uncorrected for elevation, DAYLIGHT time used, \* shows clock reset.  
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

\*\*\*\*\* 2023 JULY \*\*\*\*\*

Date (eve/morn)	LMST midn	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	Moon: ----- set %illum	RA	Dec	Twi-Twi hours
Sat Jul 01/Sun Jul 02	17 10	20 48	22 35	4 33 6 19	15 45 21 43	19 29	5 02 98	17 26.6	-28 01	6.0
Sun Jul 02/Mon Jul 03	17 14	20 48	22 35	4 33 6 20	15 49 21 48	20 38	6 06 100	18 33.7	-28 42	6.0
Mon Jul 03/Tue Jul 04	17 18	20 48	22 35	4 34 6 20	15 52 21 53	21 39	..... 99	19 41.5	-27 20	6.0
Tue Jul 04/Wed Jul 05	17 22	20 48	22 34	4 35 6 21	15 56 21 57	22 31	..... 95	20 46.8	-24 02	6.0
Wed Jul 05/Thu Jul 06	17 26	20 48	22 34	4 35 6 21	16 00 22 02	23 13	..... 89	21 48.0	-19 12	6.0
Thu Jul 06/Fri Jul 07	17 30	20 48	22 33	4 36 6 22	16 03 22 07	23 49	..... 80	22 44.5	-13 18	6.0
Fri Jul 07/Sat Jul 08	17 34	20 47	22 33	4 37 6 22	16 07 22 11	0 19	..... 70	23 37.2	- 6 52	6.1
Sat Jul 08/Sun Jul 09	17 38	20 47	22 33	4 38 6 23	16 10 22 16	0 47	..... 59	0 27.3	- 0 17	6.1
Sun Jul 09/Mon Jul 10	17 42	20 47	22 32	4 38 6 24	16 13 22 21	1 15	..... 48	1 16.1	6 05	6.1
Mon Jul 10/Tue Jul 11	17 46	20 47	22 31	4 39 6 24	16 17 22 26	1 43	..... 37	2 04.8	11 59	6.1
Tue Jul 11/Wed Jul 12	17 50	20 46	22 31	4 40 6 25	16 20 22 30	2 14	..... 28	2 54.4	17 10	6.2
Wed Jul 12/Thu Jul 13	17 54	20 46	22 30	4 41 6 25	16 24 22 35	2 48	..... 19	3 45.5	21 26	6.2
Thu Jul 13/Fri Jul 14	17 57	20 46	22 30	4 42 6 26	16 27 22 40	3 28	17 41	12 4 38.2	24 36	6.2
Fri Jul 14/Sat Jul 15	18 01	20 45	22 29	4 43 6 27	16 30 22 45	4 14	18 43	6 5 32.3	26 30	6.2
Sat Jul 15/Sun Jul 16	18 05	20 45	22 28	4 44 6 27	16 33 22 50	5 06	19 40	2 6 26.8	27 03	6.3
Sun Jul 16/Mon Jul 17	18 09	20 44	22 27	4 45 6 28	16 36 22 55	6 02	20 30	0 7 20.5	26 16	6.3
Mon Jul 17/Tue Jul 18	18 13	20 44	22 26	4 46 6 29	16 39 23 00	..... 21 13	0 8 12.5	24 15	6.3	
Tue Jul 18/Wed Jul 19	18 17	20 43	22 26	4 47 6 29	16 43 23 05	..... 21 49	2 9 02.1	21 09	6.4	
Wed Jul 19/Thu Jul 20	18 21	20 43	22 25	4 48 6 30	16 46 23 10	..... 22 20	5 9 49.1	17 11	6.4	
Thu Jul 20/Fri Jul 21	18 25	20 42	22 24	4 49 6 31	16 49 23 15	..... 22 48	10 10 33.8	12 33	6.4	
Fri Jul 21/Sat Jul 22	18 29	20 41	22 23	4 50 6 31	16 52 23 20	..... 23 12	17 11 17.0	7 24	6.4	
Sat Jul 22/Sun Jul 23	18 33	20 41	22 22	4 51 6 32	16 55 23 25	..... 23 36	24 11 59.4	1 56	6.5	
Sun Jul 23/Mon Jul 24	18 37	20 40	22 21	4 52 6 33	16 58 23 30	..... 23 59	33 12 42.0	- 3 43	6.5	
Mon Jul 24/Tue Jul 25	18 41	20 39	22 20	4 53 6 34	17 00 23 35	..... 0 23	42 13 25.9	- 9 22	6.6	
Tue Jul 25/Wed Jul 26	18 45	20 39	22 19	4 54 6 34	17 03 23 40	..... 0 50	53 14 12.3	-14 50	6.6	
Wed Jul 26/Thu Jul 27	18 49	20 38	22 18	4 55 6 35	17 06 23 45	..... 1 21	63 15 02.4	-19 53	6.6	
Thu Jul 27/Fri Jul 28	18 53	20 37	22 17	4 56 6 36	17 09 23 50	..... 1 58	73 15 57.4	-24 09	6.7	
Fri Jul 28/Sat Jul 29	18 57	20 36	22 15	4 57 6 36	17 12 23 55	..... 2 46	82 16 57.6	-27 16	6.7	
Sat Jul 29/Sun Jul 30	19 01	20 36	22 14	4 59 6 37	17 15 24 00	18 16	3 44	90 18 02.6	-28 45	6.7
Sun Jul 30/Mon Jul 31	19 04	20 35	22 13	5 00 6 38	17 17 0 05	19 21	4 53	96 19 10.1	-28 17	6.8
Mon Jul 31/Tue Aug 01	19 08	20 34	22 12	5 01 6 39	17 20 0 10	20 18	6 09	99 20 17.3	-25 46	6.8

\*\*\*\*\* 2023 AUGUST \*\*\*\*\*

Date (eve/morn)	LMST midn	----- set	Sun: ----- twi.end twi.beg	rise	LST twilight: eve morn	----- rise	Moon: ----- set %illum	RA	Dec	Twi-Twi hours
Tue Aug 01/Wed Aug 02	19 12	20 33	22 11	5 02 6 39	17 23 0 15	21 05	..... 99	21 21.6	-21 25	6.9
Wed Aug 02/Thu Aug 03	19 16	20 32	22 09	5 03 6 40	17 25 0 20	21 44	..... 97	22 21.7	-15 42	6.9
Thu Aug 03/Fri Aug 04	19 20	20 31	22 08	5 04 6 41	17 28 0 25	22 17	..... 91	23 17.7	- 9 09	6.9
Fri Aug 04/Sat Aug 05	19 24	20 30	22 07	5 05 6 42	17 31 0 30	22 47	..... 83	0 10.5	- 2 17	7.0
Sat Aug 05/Sun Aug 06	19 28	20 29	22 05	5 06 6 43	17 33 0 35	23 16	..... 73	1 01.4	4 28	7.0
Sun Aug 06/Mon Aug 07	19 32	20 28	22 04	5 07 6 43	17 36 0 40	23 44	..... 63	1 51.7	10 44	7.1
Mon Aug 07/Tue Aug 08	19 36	20 27	22 03	5 09 6 44	17 39 0 45	0 15	..... 52	2 42.3	16 16	7.1
Tue Aug 08/Wed Aug 09	19 40	20 26	22 01	5 10 6 45	17 41 0 51	0 48	..... 41	3 33.9	20 50	7.1
Wed Aug 09/Thu Aug 10	19 44	20 25	22 00	5 11 6 46	17 44 0 56	1 27	..... 32	4 26.9	24 16	7.2
Thu Aug 10/Fri Aug 11	19 48	20 24	21 59	5 12 6 46	17 46 1 01	2 11	..... 23	5 21.0	26 24	7.2
Fri Aug 11/Sat Aug 12	19 52	20 23	21 57	5 13 6 47	17 49 1 06	3 01	17 36	15 6 15.5	27 12	7.3
Sat Aug 12/Sun Aug 13	19 56	20 22	21 56	5 14 6 48	17 51 1 11	3 56	18 28	9 7 09.3	26 40	7.3
Sun Aug 13/Mon Aug 14	20 00	20 21	21 54	5 15 6 49	17 54 1 16	4 55	19 13	4 8 01.4	24 52	7.3
Mon Aug 14/Tue Aug 15	20 04	20 20	21 53	5 16 6 49	17 56 1 21	5 54	19 51	1 8 51.2	21 58	7.4
Tue Aug 15/Wed Aug 16	20 08	20 19	21 51	5 17 6 50	17 59 1 26	..... 20 23	0 9 38.6	18 09	7.4	
Wed Aug 16/Thu Aug 17	20 12	20 17	21 50	5 18 6 51	18 01 1 31	..... 20 51	1 10 23.6	13 37	7.5	
Thu Aug 17/Fri Aug 18	20 15	20 16	21 48	5 20 6 52	18 03 1 36	..... 21 17	3 11 06.9	8 34	7.5	
Fri Aug 18/Sat Aug 19	20 19	20 15	21 47	5 21 6 52	18 06 1 41	..... 21 40	7 11 49.1	3 09	7.6	
Sat Aug 19/Sun Aug 20	20 23	20 14	21 45	5 22 6 53	18 08 1 46	..... 22 03	12 12 31.2	- 2 27	7.6	
Sun Aug 20/Mon Aug 21	20 27	20 13	21 44	5 23 6 54	18 11 1 51	..... 22 26	19 13 14.1	- 8 04	7.6	
Mon Aug 21/Tue Aug 22	20 31	20 11	21 42	5 24 6 55	18 13 1 56	..... 22 51	28 13 58.9	-13 31	7.7	
Tue Aug 22/Wed Aug 23	20 35	20 10	21 41	5 25 6 55	18 15 2 01	..... 23 20	37 14 46.6	-18 35	7.7	
Wed Aug 23/Thu Aug 24	20 39	20 09	21 39	5 26 6 56	18 18 2 06	..... 23 54	47 15 38.4	-23 00	7.8	
Thu Aug 24/Fri Aug 25	20 43	20 07	21 38	5 27 6 57	18 20 2 11	..... 0 36	58 16 34.9	-26 26	7.8	
Fri Aug 25/Sat Aug 26	20 47	20 06	21 36	5 28 6 58	18 23 2 16	..... 1 27	69 17 36.0	-28 29	7.9	
Sat Aug 26/Sun Aug 27	20 51	20 05	21 34	5 29 6 58	18 25 2 21	17 04	2 29	79 18 40.8	-28 49	7.9
Sun Aug 27/Mon Aug 28	20 55	20 04	21 33	5 30 6 59	18 27 2 26	18 03	3 41	88 19 46.8	-27 11	8.0
Mon Aug 28/Tue Aug 29	20 59	20 02	21 31	5 31 7 00	18 30 2 31	18 53	4 58	94 20 51.6	-23 39	8.0
Tue Aug 29/Wed Aug 30	21 03	20 01	21 30	5 32 7 01	18 32 2 36	19 36	6 16	99 21 53.5	-18 29	8.0
Wed Aug 30/Thu Aug 31	21 07	20 00	21 28	5 33 7 01	18 34 2 40	20 12	..... 100	22 51.8	-12 08	8.1
Thu Aug 31/Fri Sep 01	21 11	19 58	21 26	5 34 7 02	18 37 2 45	20 44	..... 98	23 47.0	- 5 10	8.1

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2  
 Rise/set times in Central time ( 6 hr W), uncorrected for elevation, DAYLIGHT time used, \* shows clock reset.  
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

\*\*\*\*\* 2023 SEPTEMBER \*\*\*\*\*

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Fri Sep 01/Sat Sep 02	21 15	19 57	21 25	5 35	7 03	18 39	2 50	21 14	.....	93	0 40.2	1 56	8.2
Sat Sep 02/Sun Sep 03	21 19	19 55	21 23	5 36	7 04	18 41	2 55	21 43	.....	86	1 32.4	8 42	8.2
Sun Sep 03/Mon Sep 04	21 22	19 54	21 22	5 37	7 04	18 44	3 00	22 13	.....	77	2 24.8	14 47	8.3
Mon Sep 04/Tue Sep 05	21 26	19 53	21 20	5 38	7 05	18 46	3 05	22 46	.....	67	3 17.9	19 52	8.3
Tue Sep 05/Wed Sep 06	21 30	19 51	21 18	5 39	7 06	18 48	3 10	23 24	.....	57	4 12.2	23 45	8.3
Wed Sep 06/Thu Sep 07	21 34	19 50	21 17	5 40	7 07	18 51	3 15	0 07	.....	47	5 07.4	26 18	8.4
Thu Sep 07/Fri Sep 08	21 38	19 48	21 15	5 40	7 07	18 53	3 20	0 56	.....	37	6 02.8	27 25	8.4
Fri Sep 08/Sat Sep 09	21 42	19 47	21 14	5 41	7 08	18 55	3 25	1 50	.....	28	6 57.4	27 10	8.5
Sat Sep 09/Sun Sep 10	21 46	19 46	21 12	5 42	7 09	18 58	3 29	2 48	17 12	20	7 50.2	25 36	8.5
Sun Sep 10/Mon Sep 11	21 50	19 44	21 10	5 43	7 10	19 00	3 34	3 47	17 52	13	8 40.6	22 54	8.5
Mon Sep 11/Tue Sep 12	21 54	19 43	21 09	5 44	7 10	19 02	3 39	4 46	18 26	7	9 28.4	19 15	8.6
Tue Sep 12/Wed Sep 13	21 58	19 41	21 07	5 45	7 11	19 05	3 44	5 45	18 55	3	10 13.8	14 50	8.6
Wed Sep 13/Thu Sep 14	22 02	19 40	21 06	5 46	7 12	19 07	3 49	6 42	19 21	1	10 57.4	9 50	8.7
Thu Sep 14/Fri Sep 15	22 06	19 38	21 04	5 47	7 12	19 09	3 54	.....	19 45	0	11 39.8	4 27	8.7
Fri Sep 15/Sat Sep 16	22 10	19 37	21 02	5 48	7 13	19 12	3 58	.....	20 08	1	12 21.9	- 1 10	8.8
Sat Sep 16/Sun Sep 17	22 14	19 35	21 01	5 48	7 14	19 14	4 03	.....	20 31	4	13 04.5	- 6 49	8.8
Sun Sep 17/Mon Sep 18	22 18	19 34	20 59	5 49	7 15	19 16	4 08	.....	20 55	9	13 48.6	-12 19	8.8
Mon Sep 18/Tue Sep 19	22 22	19 33	20 58	5 50	7 15	19 19	4 13	.....	21 23	15	14 35.2	-17 29	8.9
Tue Sep 19/Wed Sep 20	22 26	19 31	20 56	5 51	7 16	19 21	4 18	.....	21 54	23	15 25.2	-22 01	8.9
Wed Sep 20/Thu Sep 21	22 30	19 30	20 55	5 52	7 17	19 24	4 22	.....	22 33	32	16 19.3	-25 40	9.0
Thu Sep 21/Fri Sep 22	22 33	19 28	20 53	5 53	7 18	19 26	4 27	.....	23 19	43	17 17.5	-28 04	9.0
Fri Sep 22/Sat Sep 23	22 37	19 27	20 52	5 54	7 18	19 28	4 32	.....	0 16	54	18 19.2	-28 55	9.0
Sat Sep 23/Sun Sep 24	22 41	19 25	20 50	5 54	7 19	19 31	4 37	.....	1 22	65	19 22.6	-28 00	9.1
Sun Sep 24/Mon Sep 25	22 45	19 24	20 48	5 55	7 20	19 33	4 41	16 45	2 34	75	20 25.8	-25 15	9.1
Mon Sep 25/Tue Sep 26	22 49	19 22	20 47	5 56	7 21	19 36	4 46	17 29	3 50	85	21 26.9	-20 50	9.2
Tue Sep 26/Wed Sep 27	22 53	19 21	20 45	5 57	7 21	19 38	4 51	18 07	5 05	93	22 25.3	-15 04	9.2
Wed Sep 27/Thu Sep 28	22 57	19 20	20 44	5 58	7 22	19 40	4 56	18 40	6 19	98	23 21.0	- 8 22	9.2
Thu Sep 28/Fri Sep 29	23 01	19 18	20 42	5 58	7 23	19 43	5 01	19 10	7 32	100	0 15.0	- 1 14	9.3
Fri Sep 29/Sat Sep 30	23 05	19 17	20 41	5 59	7 24	19 45	5 05	19 39	.....	99	1 08.1	5 51	9.3
Sat Sep 30/Sun Oct 01	23 09	19 15	20 39	6 00	7 24	19 48	5 10	20 09	.....	95	2 01.5	12 27	9.3

\*\*\*\*\* 2023 OCTOBER \*\*\*\*\*

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Sun Oct 01/Mon Oct 02	23 13	19 14	20 38	6 01	7 25	19 50	5 15	20 42	.....	89	2 55.8	18 10	9.4
Mon Oct 02/Tue Oct 03	23 17	19 12	20 37	6 02	7 26	19 53	5 20	21 18	.....	82	3 51.6	22 43	9.4
Tue Oct 03/Wed Oct 04	23 21	19 11	20 35	6 03	7 27	19 55	5 24	22 00	.....	73	4 48.4	25 51	9.5
Wed Oct 04/Thu Oct 05	23 25	19 10	20 34	6 03	7 28	19 58	5 29	22 47	.....	63	5 45.6	27 29	9.5
Thu Oct 05/Fri Oct 06	23 29	19 08	20 32	6 04	7 28	20 00	5 34	23 41	.....	53	6 41.9	27 38	9.5
Fri Oct 06/Sat Oct 07	23 33	19 07	20 31	6 05	7 29	20 03	5 39	0 38	.....	43	7 36.3	26 24	9.6
Sat Oct 07/Sun Oct 08	23 37	19 05	20 30	6 06	7 30	20 06	5 43	1 38	.....	34	8 27.9	23 56	9.6
Sun Oct 08/Mon Oct 09	23 40	19 04	20 28	6 07	7 31	20 08	5 48	2 38	16 27	25	9 16.7	20 29	9.6
Mon Oct 09/Tue Oct 10	23 44	19 03	20 27	6 07	7 32	20 11	5 53	3 36	16 58	18	10 02.8	16 13	9.7
Tue Oct 10/Wed Oct 11	23 48	19 01	20 26	6 08	7 32	20 13	5 58	4 34	17 25	11	10 46.8	11 20	9.7
Wed Oct 11/Thu Oct 12	23 52	19 00	20 24	6 09	7 33	20 16	6 02	5 31	17 49	6	11 29.4	6 00	9.7
Thu Oct 12/Fri Oct 13	23 56	18 59	20 23	6 10	7 34	20 19	6 07	6 28	18 12	2	12 11.6	0 24	9.8
Fri Oct 13/Sat Oct 14	0 00	18 57	20 22	6 11	7 35	20 21	6 12	7 26	18 35	0	12 54.2	- 5 18	9.8
Sat Oct 14/Sun Oct 15	0 04	18 56	20 20	6 11	7 36	20 24	6 16	.....	18 59	0	13 38.2	-10 55	9.8
Sun Oct 15/Mon Oct 16	0 08	18 55	20 19	6 12	7 37	20 27	6 21	.....	19 26	2	14 24.4	-16 13	9.9
Mon Oct 16/Tue Oct 17	0 12	18 54	20 18	6 13	7 37	20 29	6 26	.....	19 56	6	15 13.9	-20 57	9.9
Tue Oct 17/Wed Oct 18	0 16	18 52	20 17	6 14	7 38	20 32	6 31	.....	20 33	12	16 07.1	-24 50	9.9
Wed Oct 18/Thu Oct 19	0 20	18 51	20 16	6 15	7 39	20 35	6 35	.....	21 17	19	17 04.2	-27 32	10.0
Thu Oct 19/Fri Oct 20	0 24	18 50	20 14	6 15	7 40	20 38	6 40	.....	22 10	28	18 04.3	-28 45	10.0
Fri Oct 20/Sat Oct 21	0 28	18 49	20 13	6 16	7 41	20 40	6 45	.....	23 12	39	19 06.1	-28 17	10.0
Sat Oct 21/Sun Oct 22	0 32	18 47	20 12	6 17	7 42	20 43	6 50	.....	0 21	50	20 07.6	-26 05	10.1
Sun Oct 22/Mon Oct 23	0 36	18 46	20 11	6 18	7 43	20 46	6 54	.....	1 33	61	21 07.3	-22 16	10.1
Mon Oct 23/Tue Oct 24	0 40	18 45	20 10	6 19	7 44	20 49	6 59	16 04	2 46	72	22 04.4	-17 06	10.1
Tue Oct 24/Wed Oct 25	0 44	18 44	20 09	6 19	7 45	20 52	7 04	16 38	3 58	82	22 59.1	-10 56	10.2
Wed Oct 25/Thu Oct 26	0 48	18 43	20 08	6 20	7 45	20 55	7 09	17 08	5 09	90	23 52.0	- 4 07	10.2
Thu Oct 26/Fri Oct 27	0 51	18 42	20 07	6 21	7 46	20 58	7 13	17 37	6 19	96	0 44.2	2 54	10.2
Fri Oct 27/Sat Oct 28	0 55	18 40	20 06	6 22	7 47	21 01	7 18	18 05	7 30	99	1 36.8	9 42	10.3
Sat Oct 28/Sun Oct 29	0 59	18 39	20 05	6 23	7 48	21 03	7 23	18 36	.....	100	2 30.8	15 52	10.3
Sun Oct 29/Mon Oct 30	1 03	18 38	20 04	6 23	7 49	21 06	7 28	19 11	.....	97	3 26.6	21 02	10.3
Mon Oct 30/Tue Oct 31	1 07	18 37	20 03	6 24	7 50	21 09	7 33	19 51	.....	93	4 24.3	24 53	10.4
Tue Oct 31/Wed Nov 01	1 11	18 36	20 02	6 25	7 51	21 13	7 37	20 36	.....	86	5 23.0	27 11	10.4

Calendar for OU Norman, west longitude (h.m.s) = 6 29 47, latitude (d.m) = 35 12.2  
 Rise/set times in Central time ( 6 hr W), uncorrected for elevation, DAYLIGHT time used, \* shows clock reset.  
 Moon info is for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

\*\*\*\*\* 2023 NOVEMBER \*\*\*\*\*

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Wed Nov 01/Thu Nov 02	1 15	18 35	20 01	6 26	7 52	21 16	7 42	21 29	.....	78	6 21.5	27 55	10.4
Thu Nov 02/Fri Nov 03	1 19	18 34	20 00	6 27	7 53	21 19	7 47	22 26	.....	70	7 18.1	27 07	10.4
Fri Nov 03/Sat Nov 04	1 23	18 33	19 59	6 28	7 54	21 22	7 52	23 26	.....	60	8 11.8	24 59	10.5
Sat Nov 04/Sun Nov 05*	1 27	18 32	19 59	5 28	6 55	21 25	7 56	0 26	.....	51	9 02.2	21 46	10.5
Sun Nov 05/Mon Nov 06	2 31	17 32	18 58	5 29	6 56	21 28	8 01	0 26	.....	41	9 51.7	17 33	10.5
Mon Nov 06/Tue Nov 07	2 35	17 31	18 57	5 30	6 57	21 31	8 06	1 24	.....	32	10 36.4	12 47	10.5
Tue Nov 07/Wed Nov 08	2 39	17 30	18 56	5 31	6 58	21 34	8 11	2 21	.....	23	11 19.4	7 32	10.6
Wed Nov 08/Thu Nov 09	2 43	17 29	18 56	5 32	6 59	21 38	8 16	3 18	.....	16	12 01.7	2 00	10.6
Thu Nov 09/Fri Nov 10	2 47	17 28	18 55	5 33	7 00	21 41	8 20	4 15	.....	10	12 44.2	- 3 42	10.6
Fri Nov 10/Sat Nov 11	2 51	17 27	18 54	5 33	7 01	21 44	8 25	5 15	16 02	5	13 27.9	- 9 22	10.7
Sat Nov 11/Sun Nov 12	2 55	17 27	18 54	5 34	7 02	21 48	8 30	6 17	16 28	1	14 13.9	-14 48	10.7
Sun Nov 12/Mon Nov 13	2 59	17 26	18 53	5 35	7 03	21 51	8 35	7 22	16 57	0	15 03.1	-19 44	10.7
Mon Nov 13/Tue Nov 14	3 03	17 25	18 53	5 36	7 04	21 54	8 39	.....	17 31	1	15 56.1	-23 51	10.7
Tue Nov 14/Wed Nov 15	3 07	17 24	18 52	5 37	7 05	21 58	8 44	.....	18 13	4	16 53.1	-26 50	10.7
Wed Nov 15/Thu Nov 16	3 10	17 24	18 52	5 38	7 06	22 01	8 49	.....	19 04	9	17 53.3	-28 20	10.8
Thu Nov 16/Fri Nov 17	3 14	17 23	18 51	5 38	7 06	22 05	8 54	.....	20 05	16	18 55.1	-28 10	10.8
Fri Nov 17/Sat Nov 18	3 18	17 23	18 51	5 39	7 07	22 08	8 59	.....	21 13	25	19 56.5	-26 16	10.8
Sat Nov 18/Sun Nov 19	3 22	17 22	18 50	5 40	7 08	22 12	9 03	.....	22 24	36	20 55.7	-22 47	10.8
Sun Nov 19/Mon Nov 20	3 26	17 22	18 50	5 41	7 09	22 15	9 08	.....	23 36	47	21 52.1	-17 59	10.9
Mon Nov 20/Tue Nov 21	3 30	17 21	18 49	5 42	7 10	22 19	9 13	.....	0 47	58	22 45.5	-12 10	10.9
Tue Nov 21/Wed Nov 22	3 34	17 21	18 49	5 43	7 11	22 22	9 18	.....	1 56	69	23 37.0	- 5 44	10.9
Wed Nov 22/Thu Nov 23	3 38	17 20	18 49	5 43	7 12	22 26	9 22	.....	3 04	79	0 27.5	1 00	10.9
Thu Nov 23/Fri Nov 24	3 42	17 20	18 49	5 44	7 13	22 30	9 27	.....	4 12	88	1 18.2	7 41	10.9
Fri Nov 24/Sat Nov 25	3 46	17 19	18 48	5 45	7 14	22 33	9 32	.....	5 21	94	2 10.3	13 56	10.9
Sat Nov 25/Sun Nov 26	3 50	17 19	18 48	5 46	7 15	22 37	9 37	.....	6 31	98	3 04.5	19 24	11.0
Sun Nov 26/Mon Nov 27	3 54	17 19	18 48	5 47	7 16	22 41	9 42	.....	7 41	100	4 01.3	23 44	11.0
Mon Nov 27/Tue Nov 28	3 58	17 18	18 48	5 48	7 17	22 45	9 46	.....	17 26	99	5 00.0	26 38	11.0
Tue Nov 28/Wed Nov 29	4 02	17 18	18 48	5 48	7 18	22 48	9 51	.....	18 16	96	5 59.6	27 57	11.0
Wed Nov 29/Thu Nov 30	4 06	17 18	18 48	5 49	7 19	22 52	9 56	.....	19 12	91	6 58.1	27 40	11.0
Thu Nov 30/Fri Dec 01	4 10	17 18	18 47	5 50	7 20	22 56	10 00	.....	20 12	84	7 54.1	25 55	11.0

\*\*\*\*\* 2023 DECEMBER \*\*\*\*\*

Date (eve/morn)	LMST midn	----- Sun: -----				LST twilight:		----- Moon: -----				Twilight	
		set	twi.end	twi.beg	rise	eve	morn	rise	set	%illum	RA	Dec	hours
Fri Dec 01/Sat Dec 02	4 14	17 18	18 47	5 51	7 21	23 00	10 05	21 13	.....	76	8 46.6	22 57	11.1
Sat Dec 02/Sun Dec 03	4 17	17 17	18 47	5 51	7 22	23 04	10 10	22 13	.....	68	9 35.6	19 02	11.1
Sun Dec 03/Mon Dec 04	4 21	17 17	18 47	5 52	7 22	23 08	10 15	23 12	.....	59	10 21.5	14 25	11.1
Mon Dec 04/Tue Dec 05	4 25	17 17	18 47	5 53	7 23	23 12	10 19	0 09	.....	49	11 05.1	9 17	11.1
Tue Dec 05/Wed Dec 06	4 29	17 17	18 48	5 54	7 24	23 16	10 24	1 06	.....	40	11 47.5	3 50	11.1
Wed Dec 06/Thu Dec 07	4 33	17 17	18 48	5 54	7 25	23 20	10 29	2 02	.....	31	12 29.6	- 1 48	11.1
Thu Dec 07/Fri Dec 08	4 37	17 17	18 48	5 55	7 26	23 24	10 33	3 00	.....	22	13 12.6	- 7 27	11.1
Fri Dec 08/Sat Dec 09	4 41	17 17	18 48	5 56	7 26	23 28	10 38	4 01	.....	15	13 57.6	-12 57	11.1
Sat Dec 09/Sun Dec 10	4 45	17 18	18 48	5 57	7 27	23 32	10 43	5 05	.....	8	14 45.6	-18 03	11.1
Sun Dec 10/Mon Dec 11	4 49	17 18	18 48	5 57	7 28	23 37	10 47	6 12	15 27	4	15 37.6	-22 29	11.1
Mon Dec 11/Tue Dec 12	4 53	17 18	18 49	5 58	7 29	23 41	10 52	7 21	16 06	1	16 34.0	-25 53	11.2
Tue Dec 12/Wed Dec 13	4 57	17 18	18 49	5 59	7 29	23 45	10 57	8 28	16 54	0	17 34.3	-27 53	11.2
Wed Dec 13/Thu Dec 14	5 01	17 18	18 49	5 59	7 30	23 49	11 01	.....	17 53	2	18 37.1	-28 12	11.2
Thu Dec 14/Fri Dec 15	5 05	17 19	18 49	6 00	7 31	23 53	11 06	.....	19 00	7	19 40.2	-26 43	11.2
Fri Dec 15/Sat Dec 16	5 09	17 19	18 50	6 00	7 31	23 58	11 10	.....	20 13	13	20 41.2	-23 32	11.2
Sat Dec 16/Sun Dec 17	5 13	17 19	18 50	6 01	7 32	0 02	11 15	.....	21 27	22	21 39.0	-18 55	11.2
Sun Dec 17/Mon Dec 18	5 17	17 20	18 51	6 02	7 33	0 06	11 19	.....	22 39	32	22 33.3	-13 16	11.2
Mon Dec 18/Tue Dec 19	5 21	17 20	18 51	6 02	7 33	0 11	11 24	.....	23 48	43	23 24.9	- 6 58	11.2
Tue Dec 19/Wed Dec 20	5 25	17 20	18 51	6 03	7 34	0 15	11 28	.....	0 56	55	0 14.9	- 0 22	11.2
Wed Dec 20/Thu Dec 21	5 28	17 21	18 52	6 03	7 34	0 20	11 33	.....	2 03	66	1 04.4	6 12	11.2
Thu Dec 21/Fri Dec 22	5 32	17 21	18 52	6 04	7 35	0 24	11 37	.....	3 10	76	1 54.8	12 25	11.2
Fri Dec 22/Sat Dec 23	5 36	17 22	18 53	6 04	7 35	0 28	11 42	.....	4 18	84	2 46.9	17 58	11.2
Sat Dec 23/Sun Dec 24	5 40	17 22	18 53	6 05	7 36	0 33	11 46	.....	5 26	91	3 41.6	22 33	11.2
Sun Dec 24/Mon Dec 25	5 44	17 23	18 54	6 05	7 36	0 37	11 50	.....	6 32	96	4 38.7	25 52	11.2
Mon Dec 25/Tue Dec 26	5 48	17 24	18 55	6 06	7 37	0 42	11 55	.....	16 06	99	5 37.4	27 41	11.2
Tue Dec 26/Wed Dec 27	5 52	17 24	18 55	6 06	7 37	0 46	11 59	.....	17 00	100	6 36.2	27 56	11.2
Wed Dec 27/Thu Dec 28	5 56	17 25	18 56	6 06	7 37	0 51	12 03	.....	17 58	98	7 33.4	26 40	11.2
Thu Dec 28/Fri Dec 29	6 00	17 25	18 56	6 07	7 38	0 56	12 08	.....	19 00	95	8 27.6	24 03	11.2
Fri Dec 29/Sat Dec 30	6 04	17 26	18 57	6 07	7 38	1 00	12 12	.....	20 01	90	9 18.3	20 23	11.2
Sat Dec 30/Sun Dec 31	6 08	17 27	18 58	6 07	7 38	1 05	12 16	.....	21 01	83	10 05.6	15 55	11.2
Sun Dec 31/Mon Jan 01	6 12	17 28	18 58	6 08	7 38	1 09	12 20	.....	21 59	75	10 50.2	10 53	11.2