

Calendar Grid

Deterministic month and year grids for LaTeX

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Beta Calendars

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Contents

1	Introduction	2
2	Design and date model	2
3	Installation and compatibility	2
4	Quick start	2
5	Month grids	3
5.1	Dimensions	3
5.2	Label lists	3
6	Year overview	4
7	Events and notes	4
8	Date ranges	5
9	Formatting hooks	5
10	Reproducible 2026–2027 example	5
11	Regression tests and limitations	7
12	Project and license	7

1 Introduction

Calendar Grid is a presentation-neutral LaTeX3 package for typesetting Gregorian month grids and year overviews. It keeps calendar arithmetic independent of the TeX engine and lets the document author control the surrounding typography and page layout. The ordinary month renderer uses a semantic table and does not load TikZ.

The intended uses include planners, technical reports, teaching schedules, project plans, and other documents that need small reusable calendars rather than a complete wall-calendar design. Packages such as `wallcalendar` focus on page layouts and photographs; `tikzcalendarnotes` decorates TikZ calendars; timetable packages model classes or dated schedules. Calendar Grid instead supplies deterministic month and year grid structures that can be placed inside ordinary documents.

2 Design and date model

All arithmetic uses the proleptic Gregorian calendar for civil years 0001–9999. Leap years are years divisible by four, except century years not divisible by 400. Weekdays are derived from an integer Julian day number; they do not depend on the compilation date, the operating system clock, time zone, locale, or TeX engine. Date-taking commands require the exact ASCII form `YYYY-MM-DD`. Invalid dates are reported as package errors and are never silently normalized.

The package does not currently calculate ISO week numbers. They are omitted so that year-boundary week-year metadata cannot be confused with the ordinary Gregorian year.

3 Installation and compatibility

Copy `calendar-grid.sty` into a directory searched by the TeX installation, or place it beside the document being compiled. The only runtime dependency is the standard `array` package. The package requires a LaTeX format dated 2020-10-01 or later and is designed for pdfLaTeX, XeLaTeX, and LuaLaTeX. It uses the document’s existing fonts and requires no shell escape, external programs, network access, or bundled font files.

4 Quick start

```
\documentclass{article}
\usepackage{calendar-grid}
\begin{document}
\CalendarGrid[
  year=2027,
  month=1,
  week-start=monday,
  layout=fixed,
  overflow=adjacent
]
\end{document}
```

January 2027

Mon	Tue	Wed	Thu	Fri	Sat	Sun
<i>28</i>	<i>29</i>	<i>30</i>	<i>31</i>	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

5 Month grids

The command `\CalendarGrid[options]` renders one month. `year` accepts 1–9999 and `month` accepts 1–12. Their stable defaults are 2027 and 1; spelling them out in documents makes the intended date particularly clear.

week-start One of `monday`, `tuesday`, `wednesday`, `thursday`, `friday`, `saturday`, or `sunday`. The weekday heading row rotates to match this choice, and the first date is placed below its matching heading.

layout=fixed Always creates six rows and seven columns (42 date positions). The configured cell and header dimensions make its geometry stable from month to month.

layout=compact Creates only the four, five, or six week rows needed for the selected first weekday and month.

overflow=adjacent Prints the previous and next month’s day numbers in leading and trailing positions, styled in italics by default.

overflow=blank Leaves overflow positions empty while preserving the selected grid’s row and column geometry.

5.1 Dimensions

`cell-width`, `cell-height`, and `header-height` accept ordinary TeX dimensions. A fixed grid’s day cells use the requested height and width. Notes that do not fit may extend visually beyond a fixed-height cell, so long notes are best given a shorter marker or handled by a custom style. `row-gap` sets the extra row height and `column-gap` sets the tabular column padding. No paper size is assumed.

5.2 Label lists

The `month-names`, `weekday-names`, and `weekday-short-names` keys accept comma-separated lists of exactly 12, 7, and 7 labels respectively. Weekday lists are ordered Monday through Sunday;

`week-start` rotates the headings. This manual label interface works with any document language and does not claim automatic integration with Babel.

6 Year overview

`\CalendarYear` renders all twelve months in row-major order. Its `columns` key accepts 1 through 4, so the same command supports one-, two-, three-, or four-column overviews. Week-start, layout, overflow, and label keys are shared with `\CalendarGrid`.

January 2027							February 2027							March 2027							April 2027						
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
28	29	30	31	1	2	3	1	2	3	4	5	6	7	1	2	3	4	5	6	7	29	30	31	1	2	3	4
4	5	6	7	8	9	10	8	9	10	11	12	13	14	8	9	10	11	12	13	14	5	6	7	8	9	10	11
11	12	13	14	15	16	17	15	16	17	18	19	20	21	15	16	17	18	19	20	21	12	13	14	15	16	17	18
18	19	20	21	22	23	24	22	23	24	25	26	27	28	22	23	24	25	26	27	28	19	20	21	22	23	24	25
25	26	27	28	29	30	31								29	30	31	1	2	3	4	26	27	28	29	30	1	2
May 2027							June 2027							July 2027							August 2027						
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
26	27	28	29	30	1	2	31	1	2	3	4	5	6	28	29	30	1	2	3	4	26	27	28	29	30	31	1
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11	2	3	4	5	6	7	8
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18	9	10	11	12	13	14	15
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25	16	17	18	19	20	21	22
24	25	26	27	28	29	30	28	29	30	1	2	3	4	26	27	28	29	30	31	1	23	24	25	26	27	28	29
31	1	2	3	4	5	6															30	31	1	2	3	4	5
September 2027							October 2027							November 2027							December 2027						
M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
30	31	1	2	3	4	5	27	28	29	30	1	2	3	1	2	3	4	5	6	7	29	30	1	2	3	4	5
6	7	8	9	10	11	12	4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12
13	14	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	16	17	18	19
20	21	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26
27	28	29	30	1	2	3	25	26	27	28	29	30	31	29	30	1	2	3	4	5	27	28	29	30	31	1	2

7 Events and notes

Register notes before rendering a month. Repeating a date appends another note to that cell.

```
\CalendarGridEvent{2027-01-15}{Project review}
```

```
\CalendarGridEvent{2027-01-15}{Send minutes}
\CalendarGrid[year=2027,month=1]
```

Events are keyed by their validated ISO date and can be defined in the preamble or document body. The default day style prints the note below the day number in a smaller size. Long notes can increase the natural height of a compact row; in a fixed grid they can extend past the configured box. A document can shorten the note or redefine the day hook.

8 Date ranges

Ranges are inclusive and can cross any month or year boundary. The optional **style** value is a name supplied to the day-formatting hook; overlapping range names are passed as a comma-separated list.

```
\CalendarGridRange[style=conference]{2026-12-28}{2027-01-08}
\CalendarGrid[year=2027,month=1]
```

Range styles do not prescribe a color or drawing package. The default style makes current-month range dates bold. A custom hook can use the style-name list to draw a rule, tint a cell using the document's existing color setup, or add a symbol.

9 Formatting hooks

`\CalendarGridFormatMonthTitle` formats the month heading. The `\CalendarGridFormatDay` hook receives, in order: the ISO date, day number, whether the date belongs to the requested month, weekday number, weekend flag, row, column, event text, and active range names. The third argument is **true** for dates in the requested month and **false** for adjacent-month dates. The weekday number uses Monday = 1 through Sunday = 7; the weekend flag is **true** for Saturday and Sunday. Row and column indices begin at 1. The final argument is a comma-separated list of active named ranges. The default day hook prints adjacent dates in italics, weekend and range dates in bold, and event text below the number.

For example, replace the month heading in a document with:

```
\RenewDocumentCommand\CalendarGridFormatMonthTitle{mm}{%
\par\smallskip\centering\Large\sffamily\bfseries #1 -- #2\par\medskip}
```

Redefine `\CalendarGridFormatDay` when a project needs a different weekend style, event marker, notes position, or range treatment. It is called once for each visible date cell in adjacent mode and once for each in-month date in blank-overflow mode.

10 Reproducible 2026–2027 example

These four grids are generated from month and year inputs; their date positions are not manually enumerated. The sequence exercises a 30-day month, a 31-day month, the transition to 2027, and the 28-day February.

November 2026

Mon	Tue	Wed	Thu	Fri	Sat	Sun
<i>26</i>	<i>27</i>	<i>28</i>	<i>29</i>	<i>30</i>	<i>31</i>	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>

December 2026

Mon	Tue	Wed	Thu	Fri	Sat	Sun
<i>30</i>	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	<i>1</i>	<i>2</i>	<i>3</i>

January 2027

Mon	Tue	Wed	Thu	Fri	Sat	Sun
<i>28</i>	<i>29</i>	<i>30</i>	<i>31</i>	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

February 2027

Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

11 Regression tests and limitations

Run `l3build check` to exercise the regression file with pdfTeX, XeTeX, and LuaTeX. It checks Gregorian leap rules, every month length, known weekdays, week-start offsets, fixed-grid size, compact four-week calculation, invalid-date rejection, events, ranges, and year rendering. Run `l3build doc` to build this guide. The 1.0.0 release intentionally does not provide ISO week numbers, automatic localization, current-day highlighting, or color-specific styling.

12 Project and license

Calendar Grid is maintained by Mateo Pedersen as part of the Beta Calendars developer tooling project. Project information: <https://www.betacalendars.com/>. Source repository and issue tracker: <https://github.com/mateopedersen/calendar-grid-latex>.

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