



# An Elegant L<sup>A</sup>T<sub>E</sub>X Template for Books

## Classic ElegantL<sup>A</sup>T<sub>E</sub>X Template

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*Victory won't come to us unless we go to it. — M. Moore*

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# Chapter 1 Elegant $\text{\LaTeX}$ Templates

On the occasion of this release, we, Elegant $\text{\LaTeX}$  Program, want to reintroduce our work to you. We are committed to creating a series of beautiful, elegant, easy to use  $\text{\LaTeX}$  templates for users. The Elegant $\text{\LaTeX}$  is currently composed of [ElegantNote](#), [ElegantBook](#), [ElegantPaper](#) for typesetting notes, books, and working papers respectively.

The latest version is available on [Github](#). This guide describes some settings of this template and how to use it. If you have any other questions, suggestions or comments, please feel free to contact us, our email is [elegantlatex2e@gmail.com](mailto:elegantlatex2e@gmail.com).

## 1.1 ElegantBook Updates

Over these years, we've received a lot of feedbacks from users, with major issues related to font installation, coding support, theorem class environments floats, theorem cross-page, cross-references, and etc. We really think about these problems, it wasn't elegant to let the user install the font for visual beauty since users got into a lot of trouble, which went against the concept of our template. So we've removed that from the new version, users don't have to install any fonts. Let's take a look at the ElegantBook template 3.x updates:

1. Remove custom font settings;
2. Add English and Chinese modes;
3. [PDF \$\text{\LaTeX}\$](#)  and [Xe \$\text{\LaTeX}\$](#)  support;
4. Use the [tcolorbox](#) package to re-written the theorem class environments;
5. Theorem class environments name updated, and cross-references fixed;
6. renew color themes and add gray and black theme;
7. Color name updated, link color unified;
8. New Elegant $\text{\LaTeX}$  Logo;
9. New cover and decorations, remove the watermark;
10. Fix appendix;
11. Add code highlighting;
12. Beautify the list environments;
13. Add simple theorem mode;
14. Add base hide option.

## Chapter 2 ElegantBook Settings

### 2.1 Compilation Methods

This template is based on the Standard LaTeX book class, so the options of book class also work. The default encoding is UTF-8, and T<sub>E</sub>X Live is recommended. The test environment is Win10 + T<sub>E</sub>X Live 2018.

### 2.2 Languages

We defined one option named `lang`, this option has two alternative values, `lang=en` (default) or `lang=cn`. `lang=cn` will make the captions of figure/table, abstract name, refname etc. Chinese. You can use this option as

```
\documentclass[en]{elegantbook}
\documentclass[lang=en]{elegantbook}
```





















**Remark** You can input Chinese Characters in either `lang=en` or `lang=cn`. If you are using (`lstlisting`) environment, and it contains Chinese characters, please use `XeLaTeX`.

### 2.3 Color Themes

This template contains 5 color themes, they are `green`<sup>1</sup>, `cyan`, `blue` (default), `gray`, `black`. You can choose green with

```
\documentclass[green]{elegantbook} %or
\documentclass[color=green]{elegantbook}
```

**Table 2.1:** ElegantBook Themes

	green	cyan	blue	gray	black	Main Environments
structure						chapter section subsection
main						definition exercise problem
second						theorem lemma corollary
third						proposition

<sup>1</sup>original default theme.

If you want to customize the colors, please select `nocolor` or use `color=none`, then define the main, second, and third colors in the preamble section as follows:

```
\definecolor{structurecolor}{RGB}{60,113,183}
\definecolor{main}{RGB}{0,166,82}%
\definecolor{second}{RGB}{255,134,24}%
\definecolor{third}{RGB}{0,174,247}%
```

## 2.4 Chapter Title Display Styles

This template contains 2 sets of *title display styles*, which including `hang` (default) and `display` style,

The difference is that the chapter heading is displayed on a single line (`hang`) and on a double line (`display`), and this guide uses `hang`. To change display style

```
\documentclass[hang]{elegantbook} %or
\documentclass[titlestyle=hang]{elegantbook}
```

## 2.5 Theorem Class Environments

We defined two sets of theorem modes, `simple` style and `fancy` style (default), you can change to `simple` mode by

```
\documentclass[simple]{elegantbook} %or
\documentclass[mode=simple]{elegantbook}
```

In this template, we defined four categories of theorem class environments

- *Theorem Environment*, including title and contents, numbering within chapter. There are three types depending on the format
  - **definition** environment, the color is `main`;
  - **theorem, lemma, corollary** environment, the color is `second`;
  - **proposition** environment, the color is `third`.
- *Example Environments*, including **example**, **exercise**, **problem** environment, auto numbering within chapter.
- *Proof Environment*, including **proof**, **note** environment, they contain introductory symbol (**note** environment) or ending symbol (**proof** environment).
- *Conclusion Environments*, including **conclusion**, **assumption**, **property**, **remark**, **solution**<sup>2</sup> environment, all of these begin with boldfaced words, and the contents are the same as a normal paragraph.

<sup>2</sup>We also define and key `result`, which can hide the `solution` and `proof` environments. You can switch by `result=answer` or `result=noanswer`

### 2.5.1 Theorem Class Environments

The template uses the `tcolorbox` package to customize the theorem class environments, it is slightly different from the normal theorem environments. The usage is as follows:

```
\begin{theorem}{<theorem name>}{<label>}
The content of theorem.
\end{theorem}
```

The first parameter `<theorem name>` is the name of the theorem, and the second parameter `label` is the label used in cross-reference with `\ref{thm:label}`. Note that cross-references must be prefixed with `thm:`.

Other theorem class environments with the same usage are:

**Table 2.2:** Theorem Class Environments

Environment	Label text	Prefix	Cross-reference
definition	label	def	<code>\ref{def:label}</code>
theorem	label	thm	<code>\ref{thm:label}</code>
lemma	label	lem	<code>\ref{lem:label}</code>
corrlary	label	cor	<code>\ref{cor:label}</code>
proposition	label	pro	<code>\ref{pro:label}</code>

### 2.5.2 Other Customized Environments

The other three math environments can be used directly since there are no options for them, the `example` environment usage:

```
\begin{example}
This is the content of example environment.
\end{example}
```

The effect is as follows:

**Example 2.1** This is the content of example environment.

These are all the same environments, except that

- `example`, `exercise`, `problem` environments numbering within chapter;
- `note` with introductory symbol, `proof` with ending symbol;
- `conclusion` environment with boldfaced keywords and normal paragraph content.

## 2.6 Base Hide Option

We defined an option to hide the base below the chapter, you can use it by

```
\documentclass[hide]{elegantbook} %or
\documentclass[base=hide]{elegantbook}
```



## 2.7 Cover and Logo

The cover image used in this template is from [pixabay.com](https://pixabay.com)<sup>3</sup>. The image is completely free and can be used in any circumstance. The cover image size is  $1280 \times 1024$ , when changing the cover, please crop it according to the size of the cover picture strictly. Here is a free online image clipping site: [befunky.com](https://befunky.com).

This Logo ratio is 1:1, that is square picture. In the replacement of the picture, please choose the appropriate picture to replace.

## 2.8 List Environments

This template uses `tikz` to customize `itemize` and `enumerate` environments, the `itemize` environment customized to the third depth, and `enumerate` environment customized to fourth depth. The effect is as follows

- |                           |                             |
|---------------------------|-----------------------------|
| • first item of nesti;    | 1. first item of nesti;     |
| • second item of nesti;   | 2. second item of nesti;    |
| • first item of nestii;   | (a). first item of nestii;  |
| • second item of nestii;  | (b). second item of nestii; |
| • first item of nestiii;  | I. first item of nestiii;   |
| • second item of nestiii. | II. second item of nestiii. |

## 2.9 Bibliography

This template uses `BibTeX` to generate the bibliography, the default bibliography style is `aer`. Let's take a glance at the citation effect, ? use data from a major peer-to-peer lending marketplace in China to study whether female and male investors evaluate loan performance differently.

If you want to use `BibTeX`, you must create a file named `reference.bib`, and add bib items (from Google Scholar, Mendeley, EndNote, and etc.) to `reference.bib` file, and cite the bibkey in the `tex` file. The `BibTeX` will automatically generate the bibliography for you for the reference you cited. If you want to add some noncited reference to the bibliography, you can use

```
\nocite{EINAV2010, Havrylchyk2018}
```

## 2.10 Preface

If you want to add a preface before the first chapter without changing the number of chapter, you can use it before the first chapter

---

<sup>3</sup>Thank ChinaTeX for providing free image source site, and [pexels.com](https://pexels.com) is also recommended.

```
\chapter*{Preface}
\addcontentsline{toc}{chapter}{Preface}
\markboth{Preface}{}
The content of Preface.
```





## Chapter 3 ElegantBook Writing Sample

### Introduction

- ☐ Theorem Class Environments
- ☐ Cross Reference
- ☐ Math Environments
- ☐ List Environments
- ☐ Logo and Base
- ☐  $a^2 + b^2 = c^2$

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

### 3.1 Writing Sample

We will define the integral of a measurable function in three steps. First, we define the integral of a nonnegative simple function. Let  $E$  be the measurable set in  $\mathcal{R}^N$ .

#### Definition 3.1. Left Coset

Let  $H$  be a subgroup of a group  $G$ . A left coset of  $H$  in  $G$  is a subset of  $G$  that is of the form  $xH$ , where  $x \in G$  and  $xH = \{xh : h \in H\}$ . Similarly a right coset of  $H$  in  $G$  is a subset of  $G$  that is of the form  $Hx$ , where  $Hx = \{hx : h \in H\}$



**Note** Note that a subgroup  $H$  of a group  $G$  is itself a left coset of  $H$  in  $G$ .

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

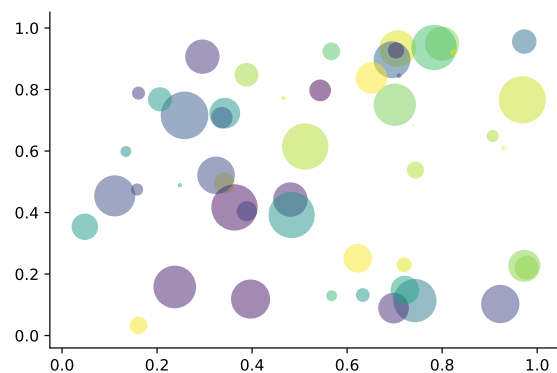
#### Theorem 3.1. Lagrange's Theorem

Let  $G$  be a finite group, and let  $H$  be a subgroup of  $G$ . Then the order of  $H$  divides the order of  $G$ .

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

### Proposition 3.1. Size of Left Coset

*Let  $H$  be a finite subgroup of a group  $G$ . Then each left coset of  $H$  in  $G$  has the same number of elements as  $H$ .*



**Figure 3.1:** Matplotlib: Scatter Plot Example

Regression analysis is a powerful statistical method that allows you to examine the relationship between two or more variables of interest. While there are many types of regression analysis, at their core they all examine the influence of one or more independent variables on a dependent variable. The process of performing a regression allows you to confidently determine which factors matter most, which factors can be ignored, and how these factors influence each other.

Let's continue using our application training example. In this case, we'd want to measure the historical levels of satisfaction with the events from the past three years or so, as well as any information possible in regards to the independent variables.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc.

**Table 3.1:** Auto MPG and Price

	(1)	(2)
mpg	-238.90*** (53.08)	-49.51 (86.16)
weight		1.75*** (0.641)
constant	11,253*** (1,171)	1,946 (3,597)
obs	74	74
$R^2$	0.220	0.293

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

- Routing and resource discovery;
  - Language Models
  - Vector Space Models
- Resilient and scalable computer networks;
- Distributed storage and search.

## Appendix Mathematical Tools

This appendix covers some of the basic mathematics used in econometrics. We briefly discuss the properties of summation operators, study the properties of linear and some nonlinear equations, and review the ratios and percentages. We also introduce some special functions that are common in econometrics applications, including quadratic functions and natural logarithms. The first four sections require only basic algebraic techniques. The fifth section briefly reviews differential Calculus. Although Calculus is not necessary to understand much of this book, it is used in some of the end-of-chapter appendices and in some of the more advanced topics in part 3.

### A.1 Summation Operator and Description Statistics

**Summation Operator** is an abbreviation used to express the summation of numbers, it plays an important role in statistics and econometrics analysis. If  $\{x_i : i = 1, 2, \dots, n\}$  is a sequence of  $n$  numbers, the summation of the  $n$  numbers is:

$$\sum_{i=1}^n x_i \equiv x_1 + x_2 + \dots + x_n \quad (\text{A.1})$$

## Appendix A Minimal Example

```
\documentclass{elegantbook}
% title info
\title{Title}
\subtitle{Subtitle is here}
% bio info
\author{Your Name}
\institute{XXX University}
\date{\today}
% extra info
\version{1.00}
\equote{Victory won\rq t come to us unless we go to it. --- M. Moore}
\logo{logo.png}
\cover{cover.jpg}

\begin{document}

\maketitle
\tableofcontents
\mainmatter
\hypersetup{pageanchor=true}
% add preface chapter here if needed
\chapter{Example Chapter Title}
The content of chapter one.

\bibliography{reference}
\end{document}
```