Example Template

Template for preparing an academic article or lab report using the rho LaTeX class in Overleaf

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Abstract

Welcome to rho (ρ) LaTeX class for making academic articles and lab reports. In this example template, we will guide you through the process of using and customizing the document to your needs. For more information of this class check out the appendix section. There, you will find codes that define key aspects of the template, allowing you to explore and modify them. If you do not need the abstract set *false* to rho-abstract. It is worth to mention that this template is inspired by an earlier work, the tau LaTeX class, designed with academic intentions.

Keywords: *keyword 1, keyword 2, keyword 3, keyword 4, keyword 5*

1. Introduction

Welcome to *rho class* template for preparing your academic article or lab report. Throughout this guide, we will show you how to use this template and how to make modifications to this class.

This class includes the following files placed in the 'rho-class' folder: rho.cls, rhoenvs.sty, rhobabel.sty and README.md.

2. Title

The `\maketitle` command generates the title information, abstract and corresponding author information. The following sections describe each of these.

In addition to the `\title` command, a new command named `\journalname` has been added to include more information.

If you do not need this command, you can undefined it and the content will be adjusted automatically.

2.1. Abstract

The abstract is placed with `\begin{abstract} \end{abstract}` command and is declared in the preamble. Then, the keywords are placed with the command `\keywords{}`. If the keywords are not declared in the preamble, the content will be adjusted automatically.

2.2. Corresponding author

Rho includes a section for corresponding author information. In this section you can easily add important information about your article, such as doi, publication dates, and license.

If you do not need this section, you can disable it directly from the main.tex. Set *false* in `\setbool{corres-info}{true/false}`. The content will be adjusted automatically and no modifications to the class document will be necessary.

If you want this section but, for example, you do not need the doi, just do not declare the command in the preamble and the content will be adjusted automatically.

3. Other elements

3.1. Lettrine

The `\rhostart{}` command provides a personalized lettrine for the beginning of a paragraph as shown in this document example.

3.2. Line numbering

By implementing the *lineno* package, the line numbering of the document can be placed with the command `\linenumbers`.

I recommend placing the command after the table of contents for a better appearance (comment or delete if not required).

4. Equation

Equation 1, shows the Schrödinger equation as an example.

$$\frac{\hbar^2}{2m}\nabla^2\Psi + V(\mathbf{r})\Psi = -i\hbar\frac{\partial\Psi}{\partial t} \tag{1}$$

The *amssymb* package was not necessary to include, because stix2 font incorporates mathematical symbols for writing quality equations. In case you choose another font, uncomment the package in *rho class*.

In case you want to change the values that adjust the spacing above and below in the equations, go to *rho-class/rho.cls/math packages* section and play with `\setlength{\eqskip}{8pt}` value until the preferred spacing is set.

5. Rho packages

5.1. Rhoenvs

This template has its own environment package *rhoenvs.sty* designed to enhance the presentation of information within documents. Among these custom environments are *rhoenv*, *info* and *note*.
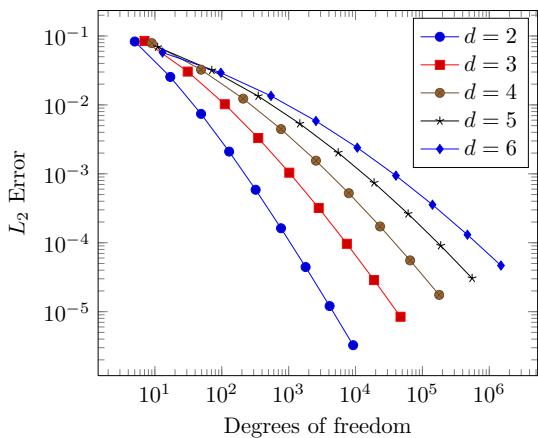
There are two environments which have a predefined title. These can be included by the command `\begin{note}` and `\begin{info}`. All the environments have the same style.

An example using the rho environment is shown below.
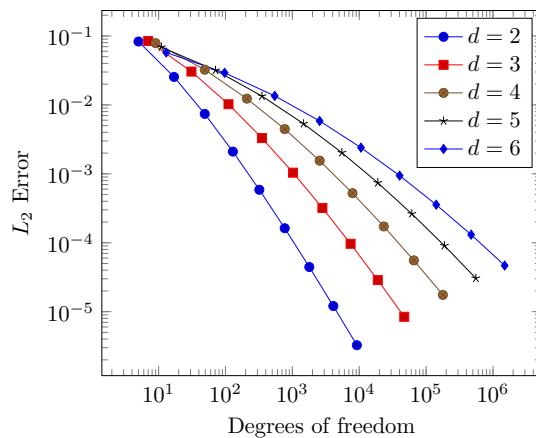
Environment with custom title

Hello! I am an example of the *rhoenv* included in rhoenvs LaTeX package. Here you can include relevant information or notes about your work. You can modify my title directly in the code.

Rhoenv is the only environment that you can customize its title. On the other hand, *info* and *note* adapt their title to Spanish automatically when the language package is defined.

(a) Example left figure.

(b) Example right figure.

Figure 2. Example figure that covers the width of the page obtained from PGFPlots [2].

5.2. Rhobabel

In this new version, we have included a package called *rhobabel*, which have all the commands that automatically translate from English to Spanish when this language package is defined.
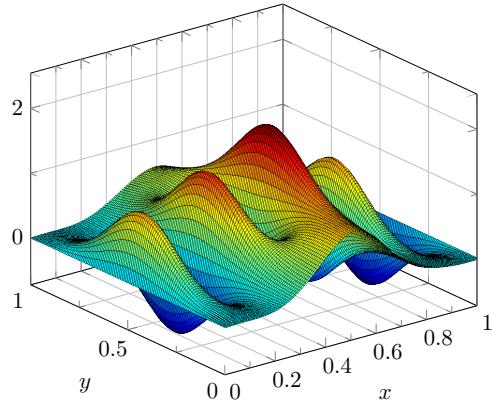
By default, rho displays its content in English. However, at the beginning of the document you will find a recommendation when writing in Spanish.

Note: You may modify this package if you want to use other language than English or Spanish. This will make easier to translate the document without having to modify the class document.

6. Figures and tables

6.1. Sample figure

Figure 1 shows an example figure.

Figure 1. Example figure obtained from PGFPlots [2].

6.2. Sample double figure

Figure 2 shows an example of a two-picture floating figure that covers the width of the page. It can be positioned at the top or bottom of the page. The space between the figures can also be changed using the `\hspace{Xpt}` command.

6.3. Sample table

In the same way as the figures, you can place tables in one or two columns, depending on the length of the table.

Table 1, shows an example table that covers the width of the page positioned at the bottom of a new page.

7. Codes

This class[1] includes the *listings* package, which offers customized features for adding codes specially for C, C++, LaTeX and Matlab. You can customize the format in *rho class* file.

```matlab
function fibonacci_sequence(num_terms)
    % Initialize the first two terms of the
    sequence
    fib_sequence = [0, 1];

    if num_terms < 1
        disp('Number of terms should be greater
    than or equal to 1.');
        return;
    elseif num_terms == 1
        fprintf('Fibonacci Sequence:\n%d\n',
    fib_sequence(1));
        return;
    elseif num_terms == 2
        fprintf('Fibonacci Sequence:\n%d\n%d\n',
     fib_sequence(1), fib_sequence(2));
        return;
    end

    % Calculate and display the Fibonacci
    sequence
    for i = 3:num_terms
        fib_sequence(i) = fib_sequence(i-1) +
    fib_sequence(i-2);
    end

    fprintf('Fibonacci Sequence:\n');
    disp(fib_sequence);
end
```

Code 1. Example of matlab code.

If line numbering is enabled, we recommend placing the command `\nolinenumbers` at the beginning and `\linenumbers` at the end of the code.

This will temporarily remove line numbering and the code will look better.

■ Unnumbered section

If a unnumbered section is declared, a square appears followed by the section name. This style is characteristic of this class and is only for first level sections.

Since this affects the title of the table of contents and references, you can make a modification in *rho-class/rho.cls/section style* to remove the square. See appendix for more information.

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[1] Hello there! I am a footnote :)

8. Table of contents

The ToC provides a preview of the content and its location in the document. Uncomment the command \tableofcontents to display it. Remember that unnumbered sections will not appear in the ToC, however, you can place them manually with the command \addcontentsline{toc}{section}{section name}.

See the appendix section for more information. There, you will find recommended modifications to adjust the table of contents when unnumbered sections are defined.

9. Reference style

The default formatting for references follows the IEEE style. At the end of the document, you will find an example of the default reference formatting.

You can modify the style of your references, for that, go to *rho-class/rho.cls/biblatex*. See appendix for more information.

10. Appendix

10.1. Unnumbered sections

As mentioned in section 7, when placing a first level section without number a square appears followed by the section name. In case you do not require this extra detail, you can make the following modification.

```
1  \titleformat{name=\section,numberless}[block]
2      {\color{rhocolor}\sffamily\large\bfseries}
3      {}
4      {0em}
5      {#1}
6      []
```
Code 2. Alternative unnumbered section.

You can change to this code in *rho-class/rho.cls/section style*. Once the document is recompiled, this square will disappear.

Remember that this code affects the ToC and references title. To show rho class functionalities, this option is enabled by default.

10.2. Table of contents

In case you have chosen the unnumbered sections and you want to add the ToC, you can do the following to adjust the content.

```
1  \setlength\tocsep{0pc}
2
3  \titlecontents{section}[\tocsep]
4      {\addvspace{4pt}\sffamily\selectfont\
       bfseries}
5      {\contentslabel[\thecontentslabel]{\tocsep}}
6      {}
7      {\hfill\thecontentspage}
8      []
9
10 \titlecontents{subsection}[1pc]
11     {\addvspace{4pt}\small\sffamily\selectfont}
12     {\contentslabel[\thecontentslabel]{\tocsep}}
13     {}
14     {\ \titlerule*[.5pc]{.}\ \thecontentspage}
15     []
16
```

```
17 \titlecontents*{subsubsection}[1pc]
18     {\footnotesize\sffamily\selectfont}
19     {}
20     {}
21     {}
22     [\ \textbullet\ ]
```
Code 3. ToC when unnumbered section is chosen.

As you can see, the value of \tocsep was changed to 0pc for the sections. For subsections and subsubsections the value was changed to 1pc.

By making this small modification, the contents of the ToC will look more organized.

If you use numbered sections, you do not need to make this modifications, unless you prefer other values.

10.3. References and paths

In case you require another reference style, you can go to *rho-class/rho.cls/biblatex* and modify the following.

```
1  \usepackage[
2      backend=biber,
3      style=ieee,
4      sorting=ynt
5  ]{biblatex}
```
Code 4. Reference code.

By default, rho class has its own .bib for this example, if you want to name your own bib file, change the following path.

```
1  \addbibresource{rho.bib}
```

10.4. Info environment

We will show an example of the info environment declared in the 'rhoenvs.sty' package. Remember that *info* and *note* are the only packages that translate their title (English or Spanish).

Information

Small example of info environment.

11. Supporting

Did you like this class document? Check out tau class designed for your lab reports.

Any contributions are welcome!

Coffee keeps us awake and helps us create better LATEX templates. If you wish to support our work, you can do so through PayPal: https://www.paypal.me/GuillermoJimeenez.

Enjoy writing with rho LATEX class 📔

Table 1. Table example that covers the width of the page.

Day	Min Temp	Max Temp	Summary
Monday	11°C	22°C	A clear day with lots of sunshine. Strong breeze will bring down the temperatures.
Tuesday	9°C	19°C	Cloudy with rain, across many northern regions.
Wednesday	10°C	21°C	Rain will still linger for the morning. Conditions will improve by early afternoon and continue throughout the evening.

Note: Obtained from LATEX tables [1].

12. Contact us

You can contact us through these methods.

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◉ memo.notess

■ References

[1] C. to Wikimedia projects, *LaTeX/Tables*, Dec. 2023. [Online]. Available: https://en.wikibooks.org/wiki/LaTeX/Tables.

[2] *PGFPlots - A LaTeX package to create plots.* [Online]. Available: https://pgfplots.sourceforge.net/.