

The Coppe document class

Version 4.0

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Abstract

This document describes the `coppe` document class as well as other files distributed by the COPPETEX project. This class is suitable for writing academic dissertations, thesis and qualifying exams according to the formatting rules of “Coppe - Instituto Alberto Luiz Coimbra de Pós-Graduação e Pesquisa de Engenharia”. The set of macro commands allows its users to concentrate most of their efforts on text composition rather than on the document layout.

1 Introduction

Writing documents in L^AT_EX may be a laborious task when the authors have to prepare their manuscripts rigorously respecting formatting rules imposed by publishers or organizations. Regardless of difficulty, a lot of thesis presented to “Coppe - Instituto Alberto Luiz Coimbra de Pós-Graduação e Pesquisa de Engenharia” of the “Universidade Federal do Rio de Janeiro (UFRJ)” is typeseted in L^AT_EX. This demand motivated the creation of the COPPETEX project, which tries to facilitate and encourage the use of L^AT_EX within the Coppe/UFRJ scope.

The `Coppe` document class is the main product of COPPETEX. It was designed to be clear and succinct. It enables the creation of dissertations, qualifying exams and thesis in a simple and automatic way. The main goal of the `Coppe` class is to maintain authors strictly focused on text composition without worrying about margins sizes, line spacing, paper size, vertical and horizontal alignment, etc. The COPPETEX project comprehends also BibL^AT_EX and MakeIndex style files for creating lists of references, symbols and abbreviations. Although there aren’t official guidelines to write qualifying exams, we provide this option just for convenience, as this exam is a requisite to obtain the DSc degree and, for some of the programs, the MSc degree.

The following sections describes the user interface of the `Coppe` class. It also provides details on the use of the style files mentioned above. Throughout this document, the term *thesis* is used generically to refer to a dissertation, qualifying exam, or thesis proper.

In 2025, a new version of ABNT and new rules from UFRJ were brought to this package, leading to a great overhaul to support three languages, Brazilian Portuguese (br), English and Spanish, resulting in version 4.0.

2 License

Each file belonging to this package contains a copyright notice. Its use is protected by the GNU General Public License (GPL) version 3, so that users are free for copying, distributing or modifying the source code, among other acts covered by this license.

To see the full text of the GNU GPL license, go to the `COPYING` file attached to this package.

3 Support

Bug reports, as well as new feature requests, should be directed to <https://github.com/Coppe-UFRJ/CoppeTeX>. Create an “Issue” with your demand.

4 User interface

`\frontmatter` A thesis to be approved by the Academic Registry at Coppe/UFRJ must contain three-parts: *front*, *main* and *back* matters **TNR08a**. Each one of these parts is started by calling its corresponding macro `\frontmatter`, `\mainmatter` or `\backmatter`. The front matter of a thesis consists of front cover and face, cataloging page, dedication, acknowledgments, abstracts, table of contents, and lists of tables, algorithms, symbols and abbreviations. The main matter is just composed by chapters, while the back matter usually consists of bibliographic references, appendices and index.

You must invoke the `\frontmatter` macro immediately after the `\maketitle` command. The `\mainmatter` command comes right before the first chapter, and `\backmatter` must be typed before the list of references.

Front cover

This element was introduced by the Academic Registry. It is automatically constructed by the `\maketitle` command.

Front face

The front face is unnumbered. There, the document is not allowed to use hyphenation **TNR08a**. It is constructed by calling `\maketitle`. Next, it is described the commands used to enter the information required to create it.

`\author` The `\author` command in COPPETEX takes two arguments: the author’s first names and surname, e.g., `\author{First Names}{Surname}`. The words should be typed with only first letters in uppercase. This will reflect also in the *Ficha Catalográfica*.

`\title` The macros `\title` and `\foreigntitle` are used to enter the titles of your monograph in the current and foreign languages. The default languages are Brazilian Portuguese and English. The `babel` package is automatically loaded by `Coppe.cls`, so you do not need to load it again. The Brazilian Portuguese is the main language and the English is only required for the foreign abstract. It is also possible to use Spanish.

`\advisor` Every Coppe student is coordinated by at least one advisor. M.Sc. and D.Sc.
`\examiner`

students can have at most 2 and 3 advisors, respectively. Their names must be provided by issuing the command `\advisor` as below:

```
\advisor{Title}{Advisor's Name}{Surname}{Degree}
\advisor{Title}{Second Advisor's Name}{Surname}{Degree}
\advisor{Title}{Third Advisor's Name}{Surname}{Degree}
```

The advisors are not necessarily members of the thesis examination board. Thus, it is required to enter the names of all examiners using the `\examiner` macro. The examiners' names are entered differently:

```
\examiner{Title}{First Examiner's Name Surname}{Degree}
\examiner{Title}{Second Examiner's Name Surname}{Degree}
...
\examiner{Title}{N-th Examiner's Name Surname}{Degree}
```

Remember that all names must be given before calling `\maketitle`.

`\department` The Alberto Luiz Coimbra institute is divided into 13 academic units: Biomedical Engineering (PEB), Civil Engineering (PEC), Electrical Engineering (PEE), Mechanical Engineering (PEM), Metallurgical and Materials Science Engineering (PEMM), Nuclear Engineering (PEN), Ocean Engineering (PENO), Energy Planning (PPE), Production Engineering (PEP), Nano Technology (PENT), Chemical Engineering (PEQ), Systems Engineering and Computer Science (PESC), and Transportation Engineering (PET). You must specify your department using one of the above abbreviations, e.g., `\department{PEC}`.

`\date` This macro is used to set the month and year of defense. This information is required to create the front face, cataloging details page and abstracts. For example, October 2007 should be entered as `\date{10}{2007}`.

`\keyword` The keywords should describe the concentration areas of your work. You must provide them as follows:

```
\keyword{First Keyword}
\keyword{Second Keyword}
...
\keyword{N-th Keyword}
```

Usually, six words are enough.

Cataloging details

This page contains cataloging information useful for librarians. Fortunately, it is automatically generated from the data you entered at the time you call `\maketitle`. It is not needed in qualifying exams, though.

Dedication (optional)

`\dedication` This macro was added for convenience. The input text is placed at the right bottom of a blank page. It is emphasized and in normal size.

Abstracts

`\abstract` (*env.*) As stated by the Academic Registry **TNR08a**, abstracts must be in one page
`\foreignabstract` (*env.*) each, with at most 250 words. We recommended that they should be only one paragraph long. They must be defined inside the environments `abstract` and `foreignabstract`.

Lists of symbols and abbreviations (optional)

`\abbrev` The lists of symbols and abbreviations are optional, although highly recommended.
`\symbol` It is a good practice to define a symbol/abbreviation in its first occurrence in the text. To define a symbol use `\symbol[alphabetic symbol]{Symbol}{Symbol Definition}`, and for abbreviations `\abbrev[alphabetic symbol]{Abbreviation}{Abbreviation Definition}`. These commands are called *dummy*, since they don't output anything at the place they are executed, just an entry in the correspondent list.
`\makeloabbreviations` These lists are lexicographically sorted by using the MakeIndex program, which `\makelosymbols` is part of any L^AT_EX implementation. For `\symbol`, if the optional parameter is provided, it will be used as sort key. This was later, in 2024, implemented also for `\printlosymbols` `\abbrev`, otherwise *Symbol*, or *Abbreviation* will be used as sort key, what can result in an undesirable order if it contains L^AT_EX commands, mathematical symbols, or mix of uppercase and lowercase. MakeIndex needs two commands to create a final sorted list: one which generates a list of entries and the other that indicates the position where the list will be printed out. To generate the lists of symbols and abbreviations, the `Coppe` class provides the commands `\makeloabbreviations` and `\makelosymbols`, respectively. They must be called in the document preamble. The commands `\printlosymbols` and `\printloabbreviations` have to be invoked at the point where you want these lists appear, e.g., following the list of tables as showed in the example. Once you call `latex`, it will be created two files with extensions `.abx` and `.syx`, which contain MakeIndex input data. They must be processed with `makeindex` in order to get the lists correctly produced, redirecting the output to files with extension `.lab` and `.los` respectively:

```
makeindex -s Coppe.ist -o example.lab example.abx
makeindex -s Coppe.ist -o example.los example.syx
```

Note the `-s` option for specifying the style `Coppe.ist`. Now, rerun `latex` twice to get the references solved and you are done.

References

It is well known that bibliography databases can be easily maintained with the aid of BIBT_EX. Thus, the COPPETEX project designed two BIBT_EX styles, `Coppe-plain.bst` and `Coppe-unsrt.bst`. The `Coppe-plain.bst` creates a list of references alphabetically sorted. The later is a numbered style, which sorts references by the order of citation. To use them, you have to select either `Coppe-plain` or `Coppe-unsrt` as the BIBT_EX style and include your BIBT_EX references without the `bib` extension, as in the following example:

```
\bibliographystyle{Coppe-unsrt}
\bibliography{example}
```

As of May 4th, 2023, there are new bibliographic styles for english, `en-Coppe-plain.bst` and `en-Coppe-plain.bst`, that uses other string constants, such as “Technical Report” instead of “Relatório Técnico”.

Run in sequence L^AT_EX, BIBT_EX, and twice again L^AT_EX to resolve reference. These styles are `natbib` compatible. This means that you can freely issue the commands `\citet` and `\citep`, as well as any other `natbib` feature.

Appendix and Annex (Optional)

`\appendix` Appendices and annexes are optional chapters that are part of the back matter.
`\annex` The `\appendix` command is a standard L^AT_EX command used before all appendices. COPPET_EX introduces the `\annex` command, which should be used only in the back matter (i.e., after the `\backmatter` command) and only after all existing `\appendix` chapters. This restriction is due to implementation constraints.

Therefore, the order for backmatter is:

```
\backmatter
\bibliographystyle{Coppe-plain}
\bibliography{main}
\appendix
\chapter{An Appendix}
\chapter{Another Appendix}
\annex
\chapter{First Annex}
\chapter{Second Annex}
```

Annex was introduced in v3.5

5 Class options

There are some options users can specify in order to customize the appearance of the output produced by the `Coppe` class. These options can be passed to `Coppe` as follows: `\documentclass[option1, option2]{Coppe}`. In which follows, we give a brief description of all supported options.

`dsc`, `msc`, `dscrexam`, `mscexam` The `Coppe` class is able to produce thesis, dissertations, and qualifying exams, which are enabled by the `dsc`, `msc`, `mscexam`, and `dscrexam` options, respectively.

`doublespacing` The default line spacing is one-and-a-half. For enabling double spacing between lines, use the `doublespacing` option.

`numbers` The default citation style is the author-year scheme, which must be followed by the use of its corresponding BIBT_EX style, namely, the `Coppe-plain.bst` file. For numbered citations, specify the option `numbers` to the `Coppe` class. In this case, it is mandatory the use of `Coppe-unsrt.bst`, as the bibliography style.

`english` Coppe_EX uses Babel. The default language is Portuguese (actually `brazilian`), with English being the second language. If option `english` is used, English becomes the main language and Portuguese the secondary. Look at the Babel package to switch between languages.

5.1 Changing document identification

\freeconfig The user could *optionally* use the command `freeconfig` to modify the parameters that print the document identification. The command `freeconfig` needs all those parameters, which are degree initials, degree name, title, foreign title, local doctype, and foreign doctype as in the following example:

```
\freeconfig{Dr.}{Philosophiae Doctor}{PhD}{Doutor}{Dissertation}{Tese}
```

6 Quick, useful tips

Pictures. The default picture format of L^AT_EX is the Encapsulated PostScript (EPS). If you use pdfL^AT_EX, the default format becomes the PDF, but you can equally load PNG files. For such, you must enter the name of your image file without extension, e.g., `\includegraphics{filename}`, and pdflatex will firstly look for a file called `filename.pdf` and after for file `filename.png`. For producing high quality pictures with embedded fonts we recommend the Ipe drawing software available [here](#).

Fonts. The default font in L^AT_EX is the Computer Modern. If you would like to try its enhanced version, consider using the `lmodern` package. To use Times, it is recommended to load the package `mathptmx`, rather than the deprecated `times`. There is also an enhanced Times version available with the `tgtermes` package. You can still use the Arial font face with the package `uarial`.

Hyperref. When working with PDF's, there is the possibility to add extra information to the file as the author's name, document title, subject, keywords, etc. This is easily done with the `hyperref` package. It is also useful to enable hyperlinks. Fortunately, the Coppe class will do this automatically if `hyperref` is loaded.

Printing. To get your work correctly printed, you must ensure that any page scaling option (e.g., fit or shrink to printable area) isn't enabled. This kind of option often comes in print dialogs of document visualization softwares.

longquote **Quotation** To quote text larger than three lines, according to ABNT, you must increase the left margin to 4 cm, do not use quotation marks, and use a smaller font. The Coppe class provides the `longquote` environment to easily make these adjustments.

7 A simple example

```
1 {*example}
2 \documentclass[dsc]{Coppe}
3
4 \usepackage{booktabs} % tabelas mais bonitas
5 \usepackage{rotating} % rodando coisas, como tabelas
6 \usepackage{longtable} % tabelas longas
```

```

7 \usepackage[most]{tcolorbox} % caixas de texto
8 \usepackage{amsmath,amssymb}
9 \usepackage{hyperref}
10 \usepackage{listings} % para usar listagens
11 \usepackage[natbib,backend=biber,style=coppe]{biblatex}
12 \addbibresource{coppe.bib}
13
14 \makelosymbols
15 \makeloabbreviations
16
17 \begin{document}
18   \title{Titulo da Tese}
19   \foreigntitle{Thesis Title}
20   \author{Nome do Autor}{Sobrenome}
21   \advisor{Prof.}{Nome do Primeiro Orientador}{Sobrenome}{D.Sc.}
22   \advisor{Prof.}{Nome do Segundo Orientador}{Sobrenome}{Ph.D.}
23   \advisor{Prof.}{Nome do Terceiro Orientador}{Sobrenome}{D.Sc.}
24
25   \examiner{Prof.}{Nome do Primeiro Examinador Sobrenome}{D.Sc.}
26   \examiner{Prof.}{Nome do Segundo Examinador Sobrenome}{Ph.D.}
27   \examiner{Prof.}{Nome do Terceiro Examinador Sobrenome}{D.Sc.}
28   \examiner{Prof.}{Nome do Quarto Examinador Sobrenome}{Ph.D.}
29   \examiner{Prof.}{Nome do Quinto Examinador Sobrenome}{Ph.D.}
30   \department{PESC}
31   \date{01}{2024}
32
33   \keyword{Primeira palavra-chave}
34   \keyword{Segunda palavra-chave}
35   \keyword{Terceira palavra-chave}
36
37   \maketitle
38
39   \frontmatter
40   \dedication{A alguém cujo valor é digno desta dedicatória.}
41
42   \chapter*{Agradecimentos}
43
44   Gostaria de agradecer a todos.
45
46   \begin{abstract}
47
48     Apresenta-se, nesta tese, ...
49
50   \end{abstract}
51
52   \begin{foreignabstract}
53
54     In this work, we present ...
55
56   \end{foreignabstract}
57
58   \tableofcontents
59   \listoffigures
60   \listoftables

```

```

61 \printlosymbols
62 \printloabbreviations
63
64 \mainmatter
65 \chapter{Introdução}
66
67 Este é um documento exemplo para o uso da classe CoppeTeX, destinado a ajudar os alunos da
68
69 A classe \verb|Coppe| foi criada por Vicente Helano e George Ainsworth, porém, em 2024, é
70
71 A versão mais atual dessa classe é mantida no GitHub, no repositório \url{https://github.com/coppeufsc/coppe-latex}.
72
73 Esse documento segue a norma de formatação de teses e dissertações da Coppe. Ele também pode
74
75 Esse documento é usado como exemplo de coisas que podem ser feitas. Ele está configurado para
76
77 É importante de notar que essa classe não foi construída sobre a classe \LaTeX\ para a
78
79 Apesar desse modelo ser muito bom, ele tem um defeito: a limitação do sistema de referências.
80
81 Mais ainda, as regras da Coppe ainda não se adaptaram, no início de 2024, às novas regras.
82
83 Este documento não substitui, mas complementa, o documento que descreve a classe.
84
85
86
87 \chapter{Configurações Iniciais}
88
89 A primeira coisa a fazer é escolher o tipo de documento. Isso é feito como uma opção no comando
90
91 Como pode ser visto nesse documento, muita coisa pode ser configurada, o que gerará o resultado
92
93 Recomendo ler o documento “The \verb*|Coppe| document class” para entender melhor todas as
94
95 \section{Linguagem principal do texto}
96
97 Essa classe considera que o texto principal está em português e algumas partes específicas
98 \begin{itemize}
99 \item A opção \verb|english| deve ser usada no comando \verb|\documentclass|.
100 \item Os estilos de bibliografia usados devem ser \verb|en-Coppe-plain.bst| ou \verb|en-Coppe.bst|.
101 \end{itemize}
102
103 A variação de linguagem, em inglês ou português apenas, já é suportada pela classe Coppe\TeX.
104
105
106 \section{Por que usar o \LaTeX}
107
108 Há uma grande discussão entre usuário de Word e \LaTeX, principalmente, quanto ao uso dessas
109
110 Nós escolhemos o \LaTeX por alguns motivos: grande facilidade de seguir um estilo sem se preocupar
111
112 As principais desvantagens são: idiossincrasias que podem gastar tempo, pouco controle sobre o
113
114 \section{Como e onde usar o \LaTeX}

```

```

115
116 Existem muitos tutoriais de \LaTeX, mas basicamente, em 2024, ele é usado em dois ambientes
117 \begin{enumerate}
118 \item Na sua máquina, instalando uma versão completa como o Mik\TeX, típico do Windows, ou
119 \item Usar um ambiente na rede, como o Overleaf.
120 \end{enumerate}
121
122 Em todo caso, recomendo fortemente que, ao mesmo tempo, mantenha versões no Git e faça o backup
123
124
125 \chapter{Algumas Regras da Coppe}
126
127 Todas abreviaturas e símbolos devem ser definida antes de utilizada. Isso é facilmente feito
128
129 É imprescindível definir os símbolos, tal como o
130 conjunto dos números reais  $\mathbb{R}$  e o conjunto vazio  $\emptyset$ .
131 \symbol{\mathbb{R}}{Conjunto dos números reais}
132 \symbol{\emptyset}{Conjunto vazio}. Usamos esse exemplo aqui justamente para mostrar como
133
134 Para as listas de abreviaturas e símbolos funcionarem no Overleaf é necessário rodar o \verb|makefile|
135
136 Como as listas de símbolos e de abreviaturas usamo o mesmo comando usado para criar índice
137
138 \section{Citações}
139
140 Citações curtas podem ser feitas \verb|\quote{o comando quote}| ou direto com ``duas crases e dois
141
142 \begin{longquote}
143 Um exemplo de citação longa nas regras da ABNT (4cm de recuo e fonte menor)
144 feita com o ambiente \verb|longquote|= The primary objective of this
145 investigation was to determine the feasibility of detecting corrosion in
146 aluminum Naval aircraft components with neutron radiographic interrogation
147 and the use of standard corrosion penetrameters. Secondary objectives
148 included the determination of the effect of object thickness on image quality,
149 the defining of minimum levels of detectability and a preliminary investigation
150 of a means whereby the degree of corrosion could be quantified with neutron
151 radiographic data. \verb|\cite{article-example}|
152 \end{longquote}
153
154 Citações devem apontar as referências. Para isso, está disponível o ótimo pacote \verb|verb*| na
155
156 Em todo caso, \verb|\textbf{deve se tomar enorme atenção com as citações, para evitar ocorrer em| 
157
158 \chapter{Floats}
159
160 Grande parte dos problemas de iniciantes, e veteranos, em \LaTeX é da localização dos \verb|texti|
161
162 A regra geral de posicionamento é que uma figura ou quadro só pode aparecer a partir da mesma
163
164 \verb|\textbf{Segundo a norma da ABNT, as legendas}| \verb|\verb|\caption|| \verb|\textbf{das figuras e quadros}| 
165
166 Quadros são opcionais. Quando usados, tabelas passam a só conter números, enquanto quadros contêm
167
168

```

```

169 \section{Tabelas e Figuras Padrão}
170
171 Vamos ver uma tabela padrão, como a \autoref{tab:exemplo_numeros}.
172
173 \begin{table}[ht]
174 \centering % Centraliza a tabela
175 \caption{Exemplo de Tabela de Números}
176 \label{tab:exemplo_numeros}
177 \begin{tabular}{ccc} % Define a quantidade de colunas
178 \hline % Linha superior
179 \textbf{Coluna 1} & \textbf{Coluna 2} & \textbf{Coluna 3} \\ % Cabeçalhos
180 \hline % Linha média
181 1 & 2 & 3 \\ % Primeira linha de dados
182 \hline
183 4 & 5 & 6 \\ % Segunda linha de dados
184 \hline
185 7 & 8 & 9 \\ % Terceira linha de dados
186 \hline
187 10 & 11 & 12 \\ % Quarta linha de dados
188 \hline % Linha inferior
189 \end{tabular}
190 \end{table}
191
192
193
194 Já a \autoref{fig:exemplo_figura} é uma figura padrão, com controle da largura.
195
196 \begin{figure}[ht]
197 \centering % Centraliza a figura
198 \includegraphics[width=0.5\textwidth]{Coppe-logo.pdf} % Inclui a imagem com metade da largura
199 \caption{Exemplo de Figura com Legenda Abaixo} % Legenda da figura
200 \label{fig:exemplo_figura} % Etiqueta para referência cruzada
201 \end{figure}
202
203
204
205
206
207 \section{Tabelas mais elegantes}
208
209 Atualmente a tendência é usar tabelas mais leves, como \autoref{tab:exemplo_numerosbom}. Isso
210
211 \begin{table}[ht]
212 \centering % Centraliza a tabela
213 \caption{Exemplo de Tabela de Números mais elegantes}
214 \label{tab:exemplo_numerosbom}
215 \begin{tabular}{ccc} % Define a quantidade de colunas
216 \toprule % Linha superior
217 \textbf{Coluna 1} & \textbf{Coluna 2} & \textbf{Coluna 3} \\ % Cabeçalhos
218 \midrule % Linha média
219 1 & 2 & 3 \\ % Primeira linha de dados
220 4 & 5 & 6 \\ % Segunda linha de dados
221 7 & 8 & 9 \\ % Terceira linha de dados
222 10 & 11 & 12 \\ % Quarta linha de dados

```

```

223 \bottomrule % Linha inferior
224 \end{tabular}
225 \end{table}
226
227 \section{Tabelas Longas ou Largas}
228
229 Se sua tabela é muito longa ou larga, existem várias opções.
230 \begin{itemize}
231     \item alterar o tamanho da letra
232     \item Usar o longtable
233     \item rodar a tabela, fazendo ela em \textit{landscape}
234     \item fazer a tabela dentro de um minibox
235 \end{itemize}
236
237
238 \subsection{Tabelas largas demais}
239
240 É comum em teses que as tabelas sejam largas demais. Há várias formas de resolver isso.
241
242 A \autoref{tab:tabela_largafns} é larga demais, e nela isso é resolvido diminuindo a fonte p
243
244 \begin{table}[ht]
245 \centering % Centraliza a tabela
246 \caption{Exemplo de Tabela Larga com Fonte Menor}
247 \label{tab:tabela_largafns}
248 \footnotesize % Aplica uma fonte menor para a tabela
249 \begin{tabular}{ccccccc} % Aumente o número de colunas conforme necessário
250 \toprule
251 \textbf{Coluna 1} & \textbf{Coluna 2} & \textbf{Coluna 3} & \textbf{Coluna 4} & \textbf{Coluna 5} & \textbf{Coluna 6} & \textbf{Coluna 7} \\
252 \midrule
253 Dado 1.1 & Dado 1.2 & Dado 1.3 & Dado 1.4 & Dado 1.5 & Dado 1.6 & Dado 1.7 & Dado 1.8 \\
254 Dado 2.1 & Dado 2.2 & Dado 2.3 & Dado 2.4 & Dado 2.5 & Dado 2.6 & Dado 2.7 & Dado 2.8 \\
255 Dado 3.1 & Dado 3.2 & Dado 3.3 & Dado 3.4 & Dado 3.5 & Dado 3.6 & Dado 3.7 & Dado 3.8 \\
256 \bottomrule
257 \end{tabular}
258 \end{table}
259
260 O comando \verb|\resizebox{width}{height}{content}| permite ajustar o tamanho de qualquer co
261
262 \begin{table}[ht]
263 \centering
264 \caption{Exemplo de Tabela Redimensionada}
265 \label{tab:examplerb}
266 \resizebox{\textwidth}{!}{%
267 \begin{tabular}{llll}
268 \toprule
269 Coluna 1 & Coluna 2 & Coluna 3 & Coluna 4 \\
270 \midrule
271 Dados 1 & Dados 2 & Dados 3 & Dados 4 \\
272 Dados 5 & Dados 6 & Dados 7 & Dados 8 \\
273 \bottomrule
274 \end{tabular}}
275 }
276 \end{table}

```

```

277
278
279 Para rodar uma tabela muito larga em 90 graus no LaTeX, você pode usar o pacote \verb*|rotat
280
281 Aqui está um exemplo de como usar o ambiente \verb*|sidewaystable| para girar uma tabela. Pr
282
283 \begin{sidewaystable}
284 \centering
285 \caption{Sua Legenda Aqui}
286 \label{tab:sua_tabela}
287 \begin{tabular}{lll}
288 \toprule
289 Coluna 1 & Coluna 2 & Coluna 3 \\
290 \midrule
291 Item 1 & Item 2 & Item 3 \\
292 Item 4 & Item 5 & Item 6 \\
293 \bottomrule
294 \end{tabular}
295 \end{sidewaystable}
296
297 Se a tabela for muito longa, o ambiente \verb|longtable| é o ideal. Ele fornece comandos pa
298
299 % Exemplo de tabela longa que se estende por várias páginas
300 \begin{longtable}{|c|c|c|}
301 % primeiro cabeçalho (é o caption)
302 \caption{Exemplo de Tabela Longa}\label{tab:longa} \\
303 \hline \textbf{Coluna 1} & \textbf{Coluna 2} & \textbf{Coluna 3} \\ \hline
304 \endfirsthead
305 % cabeçalho normal
306 \multicolumn{3}{c}{%}
307 {\tablename\ \thetable{} -- continuação da página anterior} \\
308 \hline \textbf{Coluna 1} & \textbf{Coluna 2} & \textbf{Coluna 3} \\ \hline
309 \endhead
310 % pé normal
311 \hline \multicolumn{3}{|r|}{\{Continua na próxima página\}} \\ \hline
312 \endfoot
313 \hline
314 % último pé
315 \multicolumn{3}{|r|}{\{Continua na próxima página\}} \\
316 \hline \hline
317 \endlastfoot
318
319 % Conteúdo da tabela
320 1 & 2 & 3 \\
321 4 & 5 & 6 \\
322 1 & 2 & 3 \\
323 4 & 5 & 6 \\
324 1 & 2 & 3 \\
325 4 & 5 & 6 \\
326 1 & 2 & 3 \\
327 4 & 5 & 6 \\
328 1 & 2 & 3 \\
329 4 & 5 & 6 \\
330 1 & 2 & 3 \\

```

331 4 & 5 & 6 \\
332 1 & 2 & 3 \\
333 4 & 5 & 6 \\
334 1 & 2 & 3 \\
335 4 & 5 & 6 \\
336 1 & 2 & 3 \\
337 1 & 2 & 3 \\
338 4 & 5 & 6 \\
339 1 & 2 & 3 \\
340 4 & 5 & 6 \\
341 1 & 2 & 3 \\
342 4 & 5 & 6 \\
343 1 & 2 & 3 \\
344 4 & 5 & 6 \\
345 1 & 2 & 3 \\
346 4 & 5 & 6 \\
347 1 & 2 & 3 \\
348 4 & 5 & 6 \\
349 1 & 2 & 3 \\
350 4 & 5 & 6 \\
351 1 & 2 & 3 \\
352 4 & 5 & 6 \\
353 1 & 2 & 3 \\
354 4 & 5 & 6 \\
355 1 & 2 & 3 \\
356 4 & 5 & 6 \\
357 1 & 2 & 3 \\
358 4 & 5 & 6 \\
359 1 & 2 & 3 \\
360 4 & 5 & 6 \\ \\ 1 & 2 & 3 \\
361 4 & 5 & 6 \\
362 1 & 2 & 3 \\
363 4 & 5 & 6 \\
364 1 & 2 & 3 \\
365 1 & 2 & 3 \\
366 4 & 5 & 6 \\
367 1 & 2 & 3 \\
368 4 & 5 & 6 \\
369 1 & 2 & 3 \\
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372 4 & 5 & 6 \\
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374 4 & 5 & 6 \\
375 1 & 2 & 3 \\
376 4 & 5 & 6 \\
377 1 & 2 & 3 \\
378 4 & 5 & 6 \\
379 1 & 2 & 3 \\
380 4 & 5 & 6 \\
381 1 & 2 & 3 \\
382 4 & 5 & 6 \\
383 1 & 2 & 3 \\
384 4 & 5 & 6 \\

```

385 1 & 2 & 3 \\
386 4 & 5 & 6 \\
387 1 & 2 & 3 \\
388 4 & 5 & 6 \\
389 1 & 2 & 3 \\
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391 1 & 2 & 3 \\
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404 4 & 5 & 6 \\
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406 4 & 5 & 6 \\
407 1 & 2 & 3 \\
408 4 & 5 & 6 \\
409 1 & 2 & 3 \\
410 4 & 5 & 6 \\
411 1 & 2 & 3 \\
412 4 & 5 & 6 \\
413 1 & 2 & 3 \\
414 4 & 5 & 6 \\
415 1 & 2 & 3 \\
416 4 & 5 & 6 \\
417 1 & 2 & 3 \\
418 4 & 5 & 6 \\
419 1 & 2 & 3 \\
420 4 & 5 & 6 \\
421 1 & 2 & 3 \\
422 4 & 5 & 6 \\
423 1 & 2 & 3 \\
424 4 & 5 & 6 \\
425 1 & 2 & 3 \\
426 4 & 5 & 6 \\
427
428 % Repetir linhas semelhantes conforme necessário para estender a tabela por 3 páginas
429 \end{longtable}
430
431 \chapter{Revis\~ao Bibliogr\'afica}
432
433 Para ilustrar a completa ades\~ao ao estilo de cita{\c c}\~oes e listagem de
434 refer\^encias bibliogr\'aficas, a Tabela\ref{tab:citation} apresenta cita{\c c}\~oes de alguns dos trabalhos contidos na norma fornecida pela CPGP da
435 Coppe, utilizando o estilo num\'erico. Tirando do comando inicial o par\'ametro opcional num\'erico
436
437
438 \begin{table}[h]

```

```

439 \caption{Exemplos de cita{\c c}\^oes utilizando o comando padr\~ao
440   \texttt{\textbackslash cite} do \LaTeX\ e
441   o comando \texttt{\textbackslash citet},
442   fornecido pelo pacote \texttt{natbib}.}
443 \label{tab:citation}
444 \centering
445 {\footnotesize
446 \begin{tabular}{|c|c|c|c|}
447   \hline
448   Tipo da Publica\c{c}\~ao & \verb|\cite| & \verb|\citet| \\
449   \hline
450   Livro & \cite{book-example} & \citet{book-example} \\
451   Artigo & \cite{article-example} & \citet{article-example} \\
452   Relat\'orio & \cite{techreport-example} & \citet{techreport-example} \\
453   Relat\'orio & \cite{techreport-exampleIn} & \citet{techreport-exampleIn} \\
454   Anais de Congresso & \cite{inproceedings-example} &
455     \citet{inproceedings-example} \\
456   S\'er\es & \cite{incollection-example} & \citet{incollection-example} \\
457   Em Livro & \cite{inbook-example} & \citet{inbook-example} \\
458   Dissertac\~ao de mestrado & \cite{mastersthesis-example} &
459     \citet{mastersthesis-example} \\
460   Tese de doutorado & \cite{phdthesis-example} & \citet{phdthesis-example} \\
461   \hline
462 \end{tabular}
463 \end{table}
464
465 \begin{table}[h]
466 \caption{Exemplos de cita{\c c}\^oes utilizando o comando padr\~ao
467   \texttt{\textbackslash cite} do \LaTeX\ e
468   o comando \texttt{\textbackslash citet},
469   fornecido pelo pacote \texttt{natbib}. Além disso, usando o booktabs.}
470 \label{tab:citation1}
471 \centering
472 {\footnotesize
473 \begin{tabular}{ccc}
474   \toprule
475   Tipo da Publica\c{c}\~ao & \verb|\cite| & \verb|\citet| \\
476   \midrule
477   Livro & \cite{book-example} & \citet{book-example} \\
478   Artigo & \cite{article-example} & \citet{article-example} \\
479   Relat\'orio & \cite{techreport-example} & \citet{techreport-example} \\
480   Relat\'orio & \cite{techreport-exampleIn} & \citet{techreport-exampleIn} \\
481   Anais de Congresso & \cite{inproceedings-example} &
482     \citet{inproceedings-example} \\
483   S\'er\es & \cite{incollection-example} & \citet{incollection-example} \\
484   Em Livro & \cite{inbook-example} & \citet{inbook-example} \\
485   Dissertac\~ao de mestrado & \cite{mastersthesis-example} &
486     \citet{mastersthesis-example} \\
487   Tese de doutorado & \cite{phdthesis-example} & \citet{phdthesis-example} \\
488   \bottomrule
489 \end{tabular}
490 \end{table}
491
492 \chapter{Alguns outros exemplo \'uteis}

```

```

493
494 \begin{tcolorbox}[title=Meu Textbox]
495 Este é o conteúdo do meu textbox. Você pode adicionar qualquer texto aqui, bem como incluir
496 \end{tcolorbox}
497
498 \begin{tcolorbox}
499 Este é o conteúdo do meu textbox sem título. Você pode adicionar qualquer texto aqui, bem co
500 \end{tcolorbox}
501
502 \begin{figure}[ht]
503     \centering
504     \begin{tikzpicture}
505         \node[anchor=south west,inner sep=0] (image) at (0,0) {\includegraphics[width=0.5\te
506         \begin{scope}[x={(image.south east)},y={(image.north west)}]
507             % Definindo o textbox dentro da figura
508             \node[anchor=north west, text width=0.3\textwidth, fill=white, opacity=0.7, text
509                 \begin{tcolorbox}[colback=red!5!white,colframe=red!75!black,title=Textbox de
510                     Este textbox fala sobre como inserir um textbox dentro de uma figura usa
511                 \end{tcolorbox}
512             };
513             \end{scope}
514         \end{tikzpicture}
515         \caption{Figura com Textbox}
516         \label{fig:figura_com_textbox1}
517 \end{figure}
518
519
520 \begin{figure}[ht]
521     \centering
522     \begin{tcolorbox}
523 Este é o conteúdo do meu textbox sem título. Você pode adicionar qualquer texto aqui, bem co
524 \end{tcolorbox}
525     \caption{Figura com Textbox simples}
526     \label{fig:figura_com_textbox}
527 \end{figure}
528
529 \chapter{Método Proposto}
530 \chapter{Resultados e Discussões}
531
532 \section{Algumas Demonstrações}
533
534 A Lista de Símbolos precisa usar comandos específicos. Aqui vamos usar os símbolos \$\alpha
535 \symbol{\beta}{Beta}{A palavra Beta more e corrigida}
536 \symbol{\zzbeta}{\$\\beta\$}{A letra \$\\beta\$ corrigida}
537 \symbol{\beta}{A palavra beta}
538 \symbol{\alpha}{A palavra alpha}
539 \symbol{\alpha}{Alpha}{A palavra Alpha}
540 \symbol{\zzalpha}{\$\\alpha\$}{A letra \$\\alpha\$ corrigida}
541 \symbol{\marco}{Marco}{A palavra Marco corrigida}
542
543 A Lista de Abreviações segue, a partir de 2024, a mesma regra, e aqui seguem alguns exempl
544 \abbrev{GoT}{Game of Thrones}
545 \abbrev[GOT]{GoT}{Game of Thrones ordenado como GOT}
546 \abbrev[iot]{IoT}{IoT ordenado como iot}

```

```

547 \abbrev[IoT]{IoT}{IoT ordenado como IoT}
548 \abbrev[IOT]{IoT}{IoT ordenado como IOT}
549 \abbrev{IoT}{IoT com ordenação default}
550 \abbrev[ITU]{ITU}{ITU mesmo}

551
552
553
554
555 \chapter{Conclusões}
556
557 \backmatter
558
559 \printbibliography
560
561
562 \appendix
563
564 \chapter{Um apêndice}
565
566 Segundo a norma da ABNT (Associação Brasileira de Normas Técnicas), a definição e utilização
567
568 Apêndice: O apêndice é um texto ou documento elaborado pelo autor do trabalho com o objetivo
569
570
571 \chapter{Outro apêndice}
572
573 \annex
574
575
576 \chapter{Um Anexo}
577 Segundo a norma da ABNT (Associação Brasileira de Normas Técnicas), a definição e utilização
578
579
580
581 Anexo: O anexo, por sua vez, consiste em um texto ou documento não elaborado pelo autor, que
582
583 No modelo \CoppeTeX os anexos devem obrigatoriamente vir depois dos apêndices e usam o comando
584
585
586 \chapter{Outro Anexo}
587
588
589
590 \end{document}
591
592 </example>

```

8 Implementation

The ‘Coppe.cls’ file
 <*class>

8.1 Identification

Name of the class, version and date

```
593 \def\filename{coppe.dtx}
594 \def\fileversion{v4.0}
595 \def\filedate{2025/10/18}
```

Requires a new Kernel

```
596 \NeedsTeXFormat{LaTeX2e}[2023/11/01]
```

Class provided

```
597 \ProvidesClass{Coppe}[\filedate\ \fileversion\ Coppe Dissertations and Thesis]
```

Base class is book, COPPETEXis now twosided, due to (**normassibi**) (**normassibi**)
asks form 12pt

```
598 \LoadClass[12pt,a4paper,twoside]{book}
```

8.2 Packages used

Packages that are used (general)

```
599 \RequirePackage{hyphenat} % Hyphenation control (e.g., \hyp{} and disabling hyphenation in
600 \RequirePackage{lastpage} % Provides label/anchor for the last page (e.g., page X of \page
601 \RequirePackage{ifthen} % Basic conditional logic (\ifthenelse) for simple class/package
602 \RequirePackage{graphicx} % Graphics inclusion and scaling (\includegraphics, rotation, clipping)
603 \RequirePackage{setspace} % Line spacing control (\singespacing, \onehalfspacing, \double
604 \RequirePackage{tabularx} % Tables with automatic column width (X column) and full-width tabular
605 \RequirePackage{etoolbox} % Robust programming tools: toggles, conditionals, patching (\ap
606 \RequirePackage{eqparbox} % Equal-width boxes for aligned text blocks across lines/columns
607 \RequirePackage{ltxcmds} % Low-level LaTeX kernel helpers used by other packages and inter
608 \RequirePackage{expl3} % LaTeX3 programming layer (token lists, properties, sequences,
609 \RequirePackage{xparse} % High-level interface to define commands/environments (\NewDocu
610 \RequirePackage[spanish,english,brazilian]{babel} % Languages!
611 \ExplSyntaxOn % Enable LaTeX3 (expl3) syntax for subsequent definitions
```

Font is T1 for latin, should we drop it for LuaLaTeX?

```
612 \RequirePackage[T1]{fontenc} % CHECK LuaLaTeX compatibility
```

8.3 Options Processing

We start with option processing, using the kvoptions package. This is new in v4.0
and traditional options should be dropped

```
613 \RequirePackage{kvoptions} % Drop traditional options
614 \SetupKeyvalOptions{family=Coppe, prefix=Coppe@}
```

This are my options now: language, degree and bibtype

```
615 \DeclareStringOption[br]{lang} % br | en | es |
616 \DeclareStringOption[msc]{degree} % msc | phd | qual | proposal
617 \DeclareStringOption[number]{bibtype} % number | alpha
618 \DeclareBoolOption[false]{doublespacing} % oneandhalfspace | doublespace
619 \ProcessKeyvalOptions*
```

8.4 Geometry

Geometry is defined in (**normassibi**) Instead of using left and right we use inner and outer, thinking in binding terms

```
620 \newcommand*\bindingoffset{0mm}
621 \newcommand*\setbindingoffset[1]{\renewcommand*\bindingoffset{#1}}
622 \RequirePackage[a4paper, % Brazilian standard
623 bindingoffset=\bindingoffset, % There are no instructions for binding offset, but we have to
624 %%vcentering=true,
625 top=3cm,
626 bottom=2cm,
627 inner=3.0cm,
628 outer=2.0cm]{geometry}
629 % This is a macro for our
630 \def\CoppeTeX{\rm C\kern-.05em\left(\kern-.025em\right.\kern-.025em o\kern-.025em\right)\kern-.025em p\kern-.025em\left(\kern-.025em\right.\kern-.025em e\kern-.025em\left.\kern-.025em\right)\kern-.025em\left(\kern-.025em\right.\kern-.025em e\kern-.025em\left.\kern-.025em\right)\kern-.025em\left(\kern-.025em\right.\kern-.025em T\kern-.025em\left.\kern-.025em\right)\kern-.025em\left(\kern-.025em\right.\kern-.025em lower.5ex\kern-.025em\left.\kern-.025em\right)\kern-.025em\left(\kern-.025em\right.\kern-.025em hbox{E}\kern-.025em\left.\kern-.025em\right)\kern-.025em\left(\kern-.025em\right.\kern-.025em kern-.125em\kern-.025em X\kern-.025em\left.\kern-.025em\right)\kern-.025em\left(\kern-.025em\right.\kern-.025em spacefactor1000\kern-.025em\left.\kern-.025em\right)}
```

9 Spacing and Font Size

Here is the default one-and-a-half line spacing. Users can change to double spacing by passing the `doublespacing` option.

```
633 % --- Global rule (main text)
634 \onehalfspacing % UFRJ/ABNT require 1.5 lines
635 \ifCoppe@doublespacing % can make it easier to comment
636 \doublespacing
637 \fi
638 % --- Local overrides for special environments
639 \AtBeginEnvironment{quotation}{\singlespacing\small}
640 \AtEndEnvironment{quotation}{\onehalfspacing\normalsize}
641 \AtBeginEnvironment{quote}{\singlespacing\small}
642 \AtEndEnvironment{quote}{\onehalfspacing\normalsize}
643 \AtBeginEnvironment{figure}{\singlespacing\small}
644 \AtEndEnvironment{figure}{\onehalfspacing\normalsize}
645 \AtBeginEnvironment{table}{\singlespacing\small}
646 \AtEndEnvironment{table}{\onehalfspacing\normalsize}
647 \AtBeginEnvironment{thebibliography}{\singlespacing}
648 \AtEndEnvironment{thebibliography}{\onehalfspacing}
```

10 Male or Female?

```
649 \newboolean{maledoc}
650 \setboolean{maledoc}{false}
651
652 \ExplSyntaxOn
653
654 \cs_new:Npn \Coppe_degperson_main:
655 {
656   \bool_if:NTF \maledoc
657   { \Coppe_str_get:nn { degperson / \Coppe@degree / m } { \l_Coppe_lang_main_tl } }
658   { \Coppe_str_get:nn { degperson / \Coppe@degree / f } { \l_Coppe_lang_main_tl } }
659 }
```

```

660
661 \let\local@degnname\Coppe_degperson_main:
662
663 \ExplSyntaxOff

10.1 I18N Engine

664 % =====
665 % Core localization (no if's)
666 % =====
667 \ExplSyntaxOn
668 % --- Public options (assume you've already set them with \koptions)
669 % \Coppe@lang = br|en|es (default br)
670 % Secondary language rule: pt -> en, en|es -> pt (br)
671 \tl_new:N \l_Coppe_lang_main_tl
672 \tl_new:N \l_Coppe_lang_second_tl
673 \tl_set:Nn \l_Coppe_lang_main_tl { \Coppe@lang }
674 \cs_new_protected:Npn \Coppe_set_secondary_lang:
675 {
676   \str_case:nnF { \Coppe@lang }
677   {
678     {br} { \tl_set:Nn \l_Coppe_lang_second_tl { en } }
679     {en} { \tl_set:Nn \l_Coppe_lang_second_tl { br } }
680     {es} { \tl_set:Nn \l_Coppe_lang_second_tl { br } }
681   } { \tl_set:Nn \l_Coppe_lang_second_tl { en } }
682 }
683 \Coppe_set_secondary_lang:
684 % --- Main/Second title helpers (map to the right stored title)
685 \cs_new:Npn \Coppe_title_main:
686 {
687   \str_case:nnF { \l_Coppe_lang_main_tl }
688   { {br}{\local@title} {pt}{\local@title} {en}{\foreign@title} {es}{\foreign@title} }
689   {\local@title}
690 }
691 \cs_new:Npn \Coppe_title_second:
692 {
693   \str_case:nnF { \l_Coppe_lang_second_tl }
694   { {br}{\local@title} {pt}{\local@title} {en}{\foreign@title} {es}{\foreign@title} }
695   {\foreign@title}
696 }
697
698
699 % --- Select babel's main language using lang=
700 % Load all and select the main one so hyphenation is correct.
701
702 \str_case:nnF { \Coppe@lang }
703 {
704   {br}{\selectlanguage{brazilian}}
705   {en}{\selectlanguage{english}}
706   {es}{\selectlanguage{spanish}}
707 }{\selectlanguage{brazilian}} % default
708
709 % --- String stores (per-domain) using \Expl3 props
710 % Generic strings (UI labels, doc types, degree names...)
711 \prop_new:N \g_Coppe_strings_prop

```

```

712 % Department full names (key = program code like PESC, value = localized name)
713 \prop_new:N \g_Coppe_dept_prop
714
715 % Setters used by language modules
716 \cs_new_protected:Npn \Coppe_str_set:n {#1} {#2} {#3}
717 { % #1 = key (e.g., doctype/msc), #2 = lang (br|en|es), #3 = value
718   \prop_gput:Nnx \g_Coppe_strings_prop {#1 / #2} {#3}
719 \cs_new_protected:Npn \Coppe_dept_set:n {#1} {#2} {#3}
720 { % #1 = PESC, #2 = lang, #3 = localized name
721   \prop_gput:Nnx \g_Coppe_dept_prop {#1 / #2} {#3}
722
723 % Getters
724 \cs_new:Npn \Coppe_str_get:nn {#1} {#2}
725 { \prop_item:Nn \g_Coppe_strings_prop {#1 / #2} }
726 \cs_new:Npn \Coppe_dept_get:nn {#1} {#2}
727 { \prop_item:Nn \g_Coppe_dept_prop {#1 / #2} }
728
729 % Convenience: in current and secondary language
730 \cs_new:Npn \Coppe_str_main:n {#1} { \Coppe_str_get:nn {#1} { \l_Coppe_lang_main_tl } }
731 \cs_new:Npn \Coppe_str_second:n {#1} { \Coppe_str_get:nn {#1} { \l_Coppe_lang_second_tl } }
732 \cs_new:Npn \Coppe_dept_main:n {#1} { \Coppe_dept_get:nn {#1} { \l_Coppe_lang_main_tl } }
733 \cs_new:Npn \Coppe_dept_second:n {#1} { \Coppe_dept_get:nn {#1} { \l_Coppe_lang_second_tl } }
734
735 % Public document commands (you'll use these throughout)
736 \NewDocumentCommand{\CoppeString}{m}{\Coppe_str_main:n{#1}}
737 \NewDocumentCommand{\CoppeStringSecond}{m}{\Coppe_str_second:n{#1}}
738
739 % Department setter API (replaces big if-then cascades)
740 % \department{PESC} will set \local@deptname (main) and \foreign@deptname (second)
741 \NewDocumentCommand{\department}{m}{%
742   \global\def\local@deptname {\Coppe_dept_main:n{#1}}
743   \global\def\foreign@deptname {\Coppe_dept_second:n{#1}}
744 }
745
746 % Titles/labels that depend on language:
747 % Example keys you'll use later: degname/msc, doctype/msc, advisor_label, etc.
748 \ExplSyntaxOff
749 % \subsection{I18N Languages}
750 \InputIfFileExists{Coppe-lang-br.def}{}{\ClassWarning{Coppe}{Coppe-lang-br.def not found}}
751 \InputIfFileExists{Coppe-lang-en.def}{}{\ClassWarning{Coppe}{Coppe-lang-en.def not found}}
752 \InputIfFileExists{Coppe-lang-es.def}{}{\ClassWarning{Coppe}{Coppe-lang-es.def not found}}
753 % ===== I18N glue (derive runtime strings from the data store) =====
754 \ExplSyntaxOn
755 % -- 2.1 Degree and doctype names from lang + degree option
756 % Keys expected in lang files (already present):
757 %   degname/msc, degname/phd, doctype/msc, doctype/phd
758 % We expose legacy macros consumed by templates:
759 \cs_new_protected:Npn \Coppe_setup_degree_strings:
760 {
761   % Degree name (e.g., Mestrado / Doutorado / Master / Doctorate)
762   \tl_gset:Nx \g_Coppe_degreename_tl
763   { \Coppe_str_get:nn { degname / \Coppe@degree } { \l_Coppe_lang_main_tl } }
764   \tl_gset:Nx \g_Coppe_degreename_second_tl
765   { \Coppe_str_get:nn { degname / \Coppe@degree } { \l_Coppe_lang_second_tl } }

```

```

766
767 % Document type (e.g., Dissertação / Tese / Dissertation / Thesis)
768 \tl_gset:Nx \g_Coppe_doctype_tl
769 { \Coppe_str_get:nn { doctype / \Coppe@degree } { \l_Coppe_lang_main_tl } }
770 \tl_gset:Nx \g_Coppe_doctype_second_tl
771 { \Coppe_str_get:nn { doctype / \Coppe@degree } { \l_Coppe_lang_second_tl } }
772
773 % Legacy macro shims (so the rest of the class continues to work)
774 \tl_gset_eq:NN \@degreename \g_Coppe_degreename_tl
775 \tl_gset_eq:NN \local@doctype \g_Coppe_doctype_tl
776 }
777
778 % -- 2.2 Months (use babel; no hard-coded month tables)
779 \cs_new:Npn \Coppe_month_main:
780 {
781 \monthname % in whatever language is currently selected (we selected main above)
782 }
783 \cs_new_protected:Npn \Coppe_month_second:
784 {
785 \begingroup
786 \str_case:nnF { \l_Coppe_lang_second_tl }
787 { {br}{\selectlanguage{brazilian}}
788 {en}{\selectlanguage{english}}
789 {es}{\selectlanguage{spanish}} }
790 { \selectlanguage{english} }
791 \monthname
792 \endgroup
793 }
794
795 % Legacy macro shims for month names:
796 \cs_new:Npn \local@monthname { \Coppe_month_main: }
797 \cs_new:Npn \foreign@monthname { \Coppe_month_second: }
798
799 % -- 2.3 Lists, glossary names, advisor/advisors label (dynamic)
800 % We keep the legacy macros but back them with CoppeString lookups.
801 \cs_new:Npn \Coppe_listabbrev_main: { \Coppe_str_main:n { listabbreviationname } }
802 \cs_new:Npn \Coppe_listsymbols_main: { \Coppe_str_main:n { listsymbolname } }
803 \cs_new:Npn \Coppe_glossary_main: { \Coppe_str_main:n { glossaryname } }
804
805 % Dynamic advisor label (singular/plural) in main & second languages
806 \cs_new:Npn \Coppe_advisor_label_main:
807 {
808 \int_compare:nNnTF { \@advisor } > { 1 }
809 { \Coppe_str_main:n { advisors_label } } % plural
810 { \Coppe_str_main:n { advisor_label } } % singular
811 }
812 \cs_new:Npn \Coppe_advisor_label_second:
813 {
814 \int_compare:nNnTF { \@advisor } > { 1 }
815 { \Coppe_str_second:n { advisors_label } }
816 { \Coppe_str_second:n { advisor_label } }
817 }
818
819 % Legacy macro shims:

```

```

820 \cs_new:Npn \listabbreviationname { \Coppe_listabbrev_main: }
821 \cs_new:Npn \listsymbolname { \Coppe_listsymbols_main: }
822 \cs_new:Npn \glossaryname { \Coppe_glossary_main: }
823 \cs_new:Npn \local@advisorstring { \Coppe_advisor_label_main: }
824 \cs_new:Npn \foreign@advisorstring { \Coppe_advisor_label_second: }
825
826 % -- 2.4 "Approved by" label (genderless in EN/ES; feminine in PT as default thesis wording)
827 % You already created keys in lang files: approved_by.
828 % Keep Portuguese feminine default ("Aprovada por") as in the class, unless maledoc=true.
829 \cs_new:Npn \Coppe_approved_main:
830 {
831   \Coppe_str_main:n { approved_by }
832 }
833
834 \AtBeginDocument{\Coppe_setup_degree_strings:}
835
836
837 \ExplSyntaxOff
838
839 % Run the setup once we know degree/lang
840
841 % Keep the bibname tweak you had for English captions:

\title Used to enter the title in Brazilian Portuguese.
842 \renewcommand\title[1]{%
843   \global\def\local@title{#1}%
844 }

\foreigntitle Used to enter the foreign title.
845 \newcommand\foreigntitle[1]{%
846   \global\def\foreign@title{#1}%
847 }

\advisor Defines globally the title, name and academic degree of the advisors.
848 \newcount\@advisor\@advisor0
849 \newcommand\advisor[4]{%
850   \global\@namedef{CoppeAdvisorTitle}{\expandafter\the\@advisor}{#1}
851   \global\@namedef{CoppeAdvisorName}{\expandafter\the\@advisor}{#2}
852   \global\@namedef{CoppeAdvisorSurname}{\expandafter\the\@advisor}{#3}
853   \global\@namedef{CoppeAdvisorDegree}{\expandafter\the\@advisor}{#4}
854   \global\advance\@advisor by 1
855   \ifnum\@advisor>1
856     \renewcommand\local@advisorstring{Orientadores}
857     \renewcommand\foreign@advisorstring{Advisors}
858   \fi
859 }

\examiner
860 \newcount\@examiner\@examiner0
861 \newcommand\examiner[3]{%
862   \global\@namedef{CoppeExaminer}{\expandafter\the\@examiner}{#1\ #2}
863   \global\advance\@examiner by 1
864 }

```

\author It was redefined to allow the identification of the author's first names and surname.

```
865 \renewcommand\author[2]{%
866   \global\def\@authname{\#1}
867   \global\def\@authsurn{\#2}
868 }
```

\date This code makes easy to switch from dates in different languages.

```
869 \renewcommand\date[2]{%
870   \month=\#1
871   \year=\#2
872 }
```

\keyword

```
873 \newcounter{keywords}
874 \newcommand\keyword[1]{%
875   \global\@namedef{CoppeKeyword:\expandafter\the\c@keywords}{#1}
876   \global\addtocounter{keywords}{1}
877 }
```

\freeconfig This command allows easy changing of core class parameters.

```
878 \newcommand\freeconfig[6]{%
879   \providecommand\@degree{}
880   \renewcommand\@degree{\#1}
881   \providecommand\@degreename{}
882   \renewcommand\@degreename{\#2}
883   \providecommand\local@degname{}
884   \renewcommand\local@degname{\#3}
885   \providecommand\foreign@degname{}
886   \renewcommand\foreign@degname{\#4}
887   \providecommand\local@doctype{}
888   \renewcommand\local@doctype{\#5}
889   \providecommand\foreign@doctype{}
890   \renewcommand\foreign@doctype{\#6}%
891 }
892 %   \end{macrocode}
893 % \end{macro}
894 %
895 % \begin{macro}{\frontmatter}
896 % The number of pages for both frontmatter and mainmatter printed
897 % in the cataloguing details page is computed by means of simple
898 % \LaTeX\ labels.
899 %   \begin{macrocode}
900 \renewcommand\frontmatter{%
901   \cleardoublepage
902   \@mainmatterfalse
903   \pagenumbering{roman}
904   \thispagestyle{empty}
905   \setcounter{page}{2}
906   \makefrontpage
907   \clearpage
908   \pagestyle{plain}
909   \makecatalog%
910 }
```

```

\mainmatter
911 \renewcommand\mainmatter{%
912   \Coppe@mainBegin
913   \cleardoublepage
914   \mainmattertrue
915   \pagestyle{plain}
916   \pagenumbering{arabic}%
917 %
\backmatter
918 \renewcommand\backmatter{%
919   \if@openright
920     \cleardoublepage
921   \else
922     \clearpage
923   \fi}
924 %

\maketitle
925 \renewcommand\maketitle{%
926   \pagenumbering{alph}
927   \ltx@ifpackageloaded{hyperref}{\Coppe@hypersetup}{}%
928   \begin{titlepage}
929   \begin{flushleft}
930   \vspace*{1.5mm}
931   \setlength\baselineskip{0pt}
932   \setlength\parskip{1mm}
933   \makebox[20mm][c]{\hspace{4.8cm}\includegraphics{Coppe-logo}}%
934   \end{flushleft}
935   \vspace{1.05cm}
936   \begin{center}
937     \nohyphens{\MakeUppercase{\Coppe_title_main:}}\par
938     % If you want to always show the second title, keep the next 3 lines;
939     % otherwise you can comment them out.
940     \str_if_eq:VnF \l_Coppe_lang_second_tl {\l_Coppe_lang_main_tl}
941     { \vspace{2mm}\nohyphens{\MakeUppercase{\Coppe_title_second:}}\par }
942     \vspace*{3cm}
943     \nohyphens{\@authname\ \@authsurn}\par
944     \end{center}
945     \vspace*{2.1cm}
946     \begin{flushright}
947     \begin{minipage}{8.45cm}
948       \frontcover@maintext
949     \end{minipage}\par
950     \vspace*{7.5mm}
951     \nohyphens{%
952       \begin{tabularx}{8.45cm}[b]{@{}l@{ }}>{\raggedright\arraybackslash}X@{}}
953       \local@advisorstring: &
954       \count1=0
955       \toks@={}
956       \@whilenum \count1<\@advisor \do{%
957         \ifcase\count1 % same as \ifnum0=\count1
958           \toks@=\expandafter{\csname CoppeAdvisorName:\the\count1%
959             \expandafter\endcsname\expandafter\space}%

```

```

959      \csname CoppeAdvisorSurname:\the\count1\endcsname\\}
960  \else
961    \toks@=\expandafter\expandafter\expandafter{%
962      \expandafter\the\expandafter\toks@%
963      \expandafter&\expandafter\space%
964      \csname CoppeAdvisorName:\the\count1\expandafter\endcsname%
965      \expandafter\space\csname CoppeAdvisorSurname:\the\count1\endcsname\\
966    }%
967    \fi
968    \advance\count1 by 1}
969    \the\toks@
970  \end{tabularx}\par
971  \end{flushright}
972  \vspace*{\fill}
973  \begin{center}
974    \local@cityname\par
975    \local@monthname\ de \number\year
976  \end{center}
977  \end{titlepage}
978  \global\let\maketitle\relax%
979  \global\let\and\relax}

980 \newcommand\makefrontpage{%
981  \begin{center}
982    \sloppy\nohyphens{\MakeUppercase{\Coppe_title_main:}}\par
983    \str_if_eq:VnF \l_Coppe_lang_second_tl {\l_Coppe_lang_main_tl}
984    { \vspace{2mm}\sloppy\nohyphens{\MakeUppercase{\Coppe_title_second:}}\par }
985    \vspace*{7mm}
986    {\@authname\ \@authsurn}\par
987  \end{center}\par
988  \vspace*{4mm}
989  \frontpage@maintext
990  \vspace*{16mm}
991 % advisors block unchanged...
992  \vspace*{20mm}
993  \noindent\begin{tabularx}{\textwidth}[b]{@{}l@{ }>{\raggedright\arraybackslash}X@{}}
994    \Coppe_approved_main: & \% <-- i18n “Approved by”
995  \count1=0
996  \toks@={}
997  \@whilenum \count1<\@examiner \do{%
998    \ifcase\count1
999      \toks@=\expandafter{\csname CoppeExaminer:\the\count1\endcsname\\}
1000    \else
1001      \toks@=\expandafter\expandafter\expandafter{%
1002        \expandafter\the\expandafter\toks@%
1003        \expandafter&\expandafter\space%
1004        \csname CoppeExaminer:\the\count1\endcsname\\
1005      }%
1006    \fi
1007    \advance\count1 by 1}
1008  \the\toks@
1009 \end{tabularx}\par
1010
1011  \vspace*{\fill}

```

```

1012 \frontpage@bottomtext}

1013 \newcommand{\Coppe@hypersetup}{%
1014 \begingroup
1015 % changes to \toks@ and \count@ are kept local;
1016 % it's not necessary for them, but it is usually the case
1017 % for \count1, because the first ten counters are written
1018 % to the DVI file, thus you got lucky because of PDF output
1019 \toks@={}%
1020 \count@=0 %
1021 \whilenum{\count@<\value{keywords}}\do{%
1022 % * a keyword separator is not necessary,
1023 % if there is just one keyword
1024 % * \csname CoppeKeyword:\the\count@\endcsname must be expanded
1025 % at least once, to get rid of the loop depended \count@
1026 \ifcase\count@ % same as \ifnum0=\count@
1027   \toks@=\expandafter{\csname CoppeKeyword:\the\count@\endcsname}%
1028 \else
1029   \toks@=\expandafter\expandafter\expandafter{%
1030     \expandafter\the\expandafter\toks@%
1031     \expandafter;\expandafter\space
1032     \csname CoppeKeyword:\the\count@\endcsname
1033   }%
1034 \fi
1035 \advance\count@ by 1 %
1036 }%
1037 \edef\x{\endgroup
1038   \noexpand\hypersetup{%
1039     pdfkeywords={\the\toks@}%
1040   }%
1041 }%
1042 \x
1043 \hypersetup{%
1044   pdfauthor={\@authname\ \@authsurn},
1045   pdftitle={\local@title},
1046   pdfsubject={\local@doctype\ de \degreename\ em \local@deptname\ da Coppe/UFRJ},
1047   pdfcreator={LaTeX with CoppeTeX toolkit},
1048   breaklinks={true},
1049   raiselinks={true},
1050   pageanchor={true},
1051 }%

```

\makecatalog When the document has illustrations, it is required to insert “: il.” between the number of pages of the textual part and the page dimension. We have created a label to flag the existence of lists of figures. It is checked to be undefined using the plain TeX command \@isundefined TeX:FAQ.

```

1052 \newcommand{\makecatalog}{%
1053   \vspace*{\fill}
1054   \begin{center}
1055     \setlength{\fboxsep}{5mm}
1056     \framebox[120mm][c]{\makebox[5mm][c]{}}
1057     \begin{minipage}[c]{105mm}
1058       \setlength{\parindent}{5mm}
1059       \noindent\sloppy\nohyphens\@authsurn,

```

```

1060 \nohyphens\@authname\par
1061 \nohyphens{%
1062   \if@english
1063     \foreign@title%
1064   \else
1065     \local@title%
1066   \fi\@\authname\ \@authsurn. -- \local@cityname:
1067 UFRJ/Coppe, \number\year.\}\par
1068 \pageref{front:pageno},
1069 \pageref{LastPage}
1070 p.\@ifundefined{r@cat:lofflag}{}{\pageref{cat:lofflag}} $29,7$cm.\par
% There is an issue here. When the last entry must be split between lines,
% the spacing between it and the next paragraph becomes smaller.
% Should we manually introduce a fixed space? But how could we know that
% a name was split? Is this happening yet?
1071 \nohyphens{%
1072 \begin{tabularx}{100mm}[b]{@{}l@{ }X@{}}
1073   \local@advisorstring: &
1074   \count1=0
1075   \toks@={}
1076   \@whilenum \count1<\@advisor \do{%
1077     \ifcase\count1 % same as \ifnum0=\count1
1078       \toks@=\expandafter{\csname CoppeAdvisorName:\the\count1%
1079         \expandafter\endcsname\expandafter\space%
1080         \csname CoppeAdvisorSurname:\the\count1\endcsname\}
1081     \else
1082       \toks@=\expandafter\expandafter\expandafter{%
1083         \expandafter\the\expandafter\toks@
1084         \expandafter&\expandafter\space
1085         \csname CoppeAdvisorName:\the\count1\expandafter\endcsname%
1086         \expandafter\space\csname CoppeAdvisorSurname:\the\count1\endcsname\%
1087       }%
1088     \fi
1089     \advance\count1 by 1
1090     \the\toks@
1091   \end{tabularx}\par
1092 \nohyphens{\local@doctype\ (\{\MakeLowercase{\@degreename}\}) --
1093 UFRJ/Coppe/Programa de \local@deptname, \number\year.\}\par
1094 Refer{\^e}ncias Bibliogr{\`a}ficas: p. \pageref{bib:begin} -- \pageref{bib:end}. \par
1095 \count1=0
1096 \count2=1
1097 \nohyphens{\@whilenum \count1<\value{keywords} \do {%
1098   \number\count2. \csname CoppeKeyword:\the\count1 \endcsname.
1099   \advance\count1 by 1
1100   \advance\count2 by 1}
1101 I. \csname CoppeAdvisorSurname:0\endcsname,%
1102   \csname CoppeAdvisorName:0\endcsname%
1103 \ifthenelse{@advisor>1}{\ \emph{et~al.}}{}.
1104 II. \local@universityname, Coppe, Programa de \local@deptname.
1105 III. T{\^e}tulo.}
1106 \end{minipage}}
1107 \end{center}
1108 \vspace*{\fill}}

```

```

\dedication
1113 \newcommand{\dedication}[1]{
1114   \gdef\@dedic{\#1}
1115   \cleardoublepage
1116   \vspace*{\fill}
1117   \begin{flushright}
1118     \begin{minipage}{60mm}
1119       \raggedleft \it \normalsize \@dedic
1120     \end{minipage}
1121   \end{flushright}

abstract (env.) This is a specialization of the abstract in the article standard class.
1122 \newenvironment{abstract}{%
1123   \clearpage
1124   \thispagestyle{plain}
1125   \abstract@toptext\par
1126   \vspace*{8.6mm}
1127   \begin{center}
1128     \sloppy\nohyphens{\MakeUppercase\local@title}\par
1129     \vspace*{13.2mm}
1130     \@authname\ \@authsurn \par
1131     \vspace*{7mm}
1132     \local@monthname/\number\year
1133   \end{center}\par
1134   \vspace*{\fill}
1135   \noindent%
1136   \begin{tabularx}{\textwidth}[b]{@{}l@{ }>{\raggedright\arraybackslash}X@{}}
1137     \local@advisorstring: &
1138     \count1=0
1139     \toks@={}
1140     \whilenum \count1<\@advisor \do{%
1141       \ifcase\count1 % same as \ifnum0=\count1
1142         \toks@=\expandafter{\csname CoppeAdvisorName:\the\count1%
1143           \expandafter\endcsname\expandafter\space%
1144           \csname CoppeAdvisorSurname:\the\count1\endcsname\}
1145       \else
1146         \toks@=\expandafter\expandafter\expandafter{%
1147           \expandafter\the\expandafter\toks@
1148           \expandafter&\expandafter\space
1149           \csname CoppeAdvisorName:\the\count1\expandafter\endcsname%
1150           \expandafter\space\csname CoppeAdvisorSurname:\the\count1\endcsname\}%
1151       }%
1152     \fi
1153     \advance\count1 by 1}
1154     \the\toks@
1155   \end{tabularx}\par
1156   \vspace*{2mm}
1157   \noindent\local@deptstring: \local@deptname\par
1158   \vspace*{7mm}}{\vspace*{\fill}}


foreignabstract (env.)
1159 \newenvironment{foreignabstract}{%
1160   \clearpage

```

```

1161 \thispagestyle{plain}
1162 % switch to the configured second language
1163 \begingroup
1164 \str_case:nnF { \l_Coppe_lang_second_tl }
1165 { {br}{\selectlanguage{brazilian}} {en}{\selectlanguage{english}} {es}{\selectlanguage{spanish}} }
1166 { \selectlanguage{english} }
1167 \foreignabstract@toptext\par
1168 \vspace*{8.6mm}
1169 \begin{center}
1170 \sloppy\nohyphens{\MakeUppercase{\Coppe_title_second:}}\par
1171 \vspace*{13.2mm}
1172 @authname\ @authsurn \par
1173 \vspace*{7mm}
1174 \foreign@monthname/\number\year
1175 \end{center}\par
1176 \vspace*{\fill}
1177 \noindent%
1178 \begin{tabularx}{\textwidth}[b]{@{}l@{ }>{\raggedright\arraybackslash}X@{}}
1179 \foreign@advisorstring: &
1180 \count1=0
1181 \toks@={}
1182 \whilenum \count1<\@advisor \do{%
1183 \ifcase\count1 % same as \ifnum0=\count1
1184 \toks@=\expandafter{\csname CoppeAdvisorName:\the\count1\%
1185 \expandafter\endcsname\expandafter\space\%
1186 \csname CoppeAdvisorSurname:\the\count1\endcsname\%
1187 \else
1188 \toks@=\expandafter\expandafter\expandafter{%
1189 \expandafter\the\expandafter\toks@%
1190 \expandafter&\expandafter\space%
1191 \csname CoppeAdvisorName:\the\count1\expandafter\endcsname\%
1192 \expandafter\space\csname CoppeAdvisorSurname:\the\count1\endcsname\%
1193 }%
1194 \fi
1195 \advance\count1 by 1}
1196 \the\toks@
1197 \end{tabularx}
1198 \vspace*{2mm}
1199 \noindent\foreign@deptstring: \foreign@deptname\par
1200 \vspace*{7mm}}{%
1201 \endgroup % restore original language
1202 \vspace*{\fill}
1203 }

\listoffigures
1204 \renewcommand\listoffigures{%
1205 \Coppe@hasLof
1206 \if@twocolumn
1207 \restonecoltrue\onecolumn
1208 \else
1209 \restonecolfalse
1210 \fi
1211 \chapter*{\listfigurename}%
1212 \addcontentsline{toc}{chapter}{\listfigurename}%

```

```

1213     \Q@mkboth{\MakeUppercase\listfigurename}%
1214             {\MakeUppercase\listfigurename}%
1215     \Q@starttoc{lof}%
1216     \if@restonecol\twocolumn\fi
1217 }

\listoftables
1218 \renewcommand\listoftables{%
1219     \if@twocolumn
1220         \Q@restonecoltrue\onecolumn
1221     \else
1222         \Q@restonecolfalse
1223     \fi
1224     \chapter*\{\listtablename\}%
1225         \addcontentsline{toc}{chapter}{\listtablename}%
1226     \Q@mkboth{%
1227         \MakeUppercase\listtablename}%
1228         {\MakeUppercase\listtablename}%
1229     \Q@starttoc{lot}%
1230     \if@restonecol\twocolumn\fi
1231 }

\printlosymbols
1232 \newcommand\printlosymbols{%
1233 \renewcommand\glossaryname{\listsymbolname}%
1234 \Q@input@{\jobname.los}%

\makelosymbols
1235 \def\makelosymbols{%
1236     \newwrite\@losfile
1237     \immediate\openout\@losfile=\jobname.syx
1238     \newcommand\symb[3][]{\Q@bsphack\begingroup
1239     \ifstrempty{##1}{\def\@tempsymb{##2}}{\def\@tempsymb{##1}}%
1240         \Q@sanitize%
1241         \Q@wrlos{\@tempsymb}{##2}{##3}\typeout%
1242     {Writing index of symbols file \jobname.syx}%
1243     \let\makelosymbols\empty%
1244 }%
1245 \Q@onlypreamble\makelosymbols

1246 \AtBeginDocument{%
1247 \Q@ifpackage{hyperref}{%
1248     \newcommand\Q@wrlos[3]{%
1249         \protected@write\@losfile{%
1250             {\string\indexentry{\#1[\#2] #3|hyperpage}{\thepage}}%
1251         \endgroup%
1252         \Q@esphack}}%
1253     \newcommand\Q@wrlos[3]{%
1254         \protected@write\@losfile{%
1255             {\string\indexentry{\#1[\#2] #3}{\thepage}}%
1256         \endgroup%
1257         \Q@esphack}}%

```

\printloabbreviations

```

1258 \newcommand\printloabbreviations{%
1259 \renewcommand\glossaryname{\listabbreviationname}%
1260 \@input{\jobname.lab}%

\makeloabbreviations
1261 \def\makeloabbreviations{%
1262   \newwrite\@labfile
1263   \immediate\openout\@labfile=\jobname.abx
1264   \newcommand\abbrev[3][]{\@bsphack\begingroup
1265     \ifstrempty{\#1}{\def\@tempsymbl{\#2}}{\def\@tempsymbl{\#1}}
1266     \@sanitize
1267     \wr@lab{\@tempsymbl{\#2}{\#3}}\typeout
1268   {Writing index of abbreviations file \jobname.abx}%
1269   \let\makeloabbreviations\empty
1270 }
1271 \onlypreamble\makeloabbreviations

1272 \AtBeginDocument{%
1273 \ifpackageloaded{hyperref}{%
1274   \newcommand\@r@lab[3]{%
1275     \protected@write\@labfile{%
1276       {\string\indexentry{\#1[\#2] #3|hyperpage}{\thepage}}%
1277     \endgroup%
1278     \@esphack}}%
1279   \newcommand\@r@lab[3]{%
1280     \protected@write\@labfile{%
1281       {\string\indexentry{\#1[\#2] #3}{\thepage}}%
1282     \endgroup%
1283     \@esphack}}}}%
1284 %%% \AtBeginDocument{%
1285 %%% \ifpackageloaded{hyperref}{%
1286 %%%   \def\@r@lab#1#2{%
1287 %%%     \protected@write\@labfile{%
1288 %%%       {\string\indexentry{[#1] #2|hyperpage}{\thepage}}%
1289 %%%     \endgroup%
1290 %%%     \@esphack}}%
1291 %%%   \def\@r@lab#1#2{%
1292 %%%     \protected@write\@labfile{%
1293 %%%       {\string\indexentry{[#1] #2}{\arabic{page}}}}%
1294 %%%     \endgroup%
1295 %%%     \@esphack}}}

1296 % Some macros used to generate cataloging information.
1297 \AtBeginDocument{%
1298   \ltx@ifpackageloaded{hyperref}{%
1299     \def\Coppe@bibEnd{%
1300       \immediate\write\@auxout{%
1301         \string\newlabel{bib:end}{}{\arabic{page}}{\page.\arabic{page}}{}}
1302     \def\Coppe@bibBegin{%
1303       \immediate\write\@auxout{%
1304         \string\newlabel{bib:begin}{}{\arabic{page}}{\page.\arabic{page}}{}}
1305     \def\Coppe@mainBegin{%
1306       \immediate\write\@auxout{%
1307         \string\newlabel{front:pageno}{}{\Roman{page}}{\page.\roman{page}}{}}
1308     \def\Coppe@hasLof{%

```

```

1309      \immediate\write\@auxout{%
1310        \string\newlabel{cat:lofflag}{{}{}{:}{~il.}{}}{page.\roman{page}}{}}}}%
1311    }{%
1312      \def\Coppe@bibEnd{%
1313        \immediate\write\@auxout{%
1314          \string\newlabel{bib:end}{{}{}{\arabic{page}}{}}}}%
1315      \def\Coppe@bibBegin{%
1316        \immediate\write\@auxout{%
1317          \string\newlabel{bib:begin}{{}{}{\arabic{page}}{}}}}%
1318      \def\Coppe@mainBegin{%
1319        \immediate\write\@auxout{%
1320          \string\newlabel{front:pageno}{{}{}{\Roman{page}}{}}}}%
1321      \def\Coppe@hasLof{%
1322        \immediate\write\@auxout{%
1323          \string\newlabel{cat:lofflag}{{}{}{:}{~il.}{}}}}%
1324    }%
1325  }%
1326 \newdimen\bibindent%
1327 \setlength\bibindent{1.5em}%
1328 \renewenvironment{thebibliography}[1]%
1329   {\onehalfspacing%
1330    \chapter*{\bibname}%
1331    \addcontentsline{toc}{chapter}{\bibname}%
1332    \Coppe@bibBegin
1333    \list{\@biblabel{\@arabic\c@enumiv}}%
1334      {\setlength{\labelwidth}{0ex}%
1335       \setlength{\leftmargin}{9.0ex}%
1336       \setlength{\itemindent}{-9.0ex}%
1337       \advance\leftmargin\labelsep%
1338       \openbib@code%
1339       \usecounter{enumiv}%
1340       \let\p@enumiv\empty%
1341       \renewcommand\theenumiv{\@arabic\c@enumiv}%
1342       \sloppy%
1343       \clubpenalty4000%
1344       \clubpenalty \clubpenalty%
1345       \widowpenalty4000%
1346       \sfcode`\. \oml%
1347     \def\@noitemerr{%
1348       \g@warning{Empty ‘thebibliography’ environment}%
1349     \Coppe@bibEnd
1350     \endlist}
1351 \longquote (env.)%
1352 \newlength\recuolongquote%
1353 \setlength\recuolongquote{4cm}%
1354 \newenvironment*{longquote}[1][default]{%
1355   \list{}{%
1356     \footnotesize%
1357     \addtolength\leftskip\recuolongquote%
1358     \item[]%
1359     \ifthenelse{\not\equal{#1}{\default}}{\itshape\selectlanguage{#1}}{}%
1360   }\endlist}%

```

```

1361 \newenvironment{theglossary}{%
1362   \if@twocolumn%
1363     \restonecoltrue\onecolumn%
1364   \else%
1365     \restonecolfalse%
1366   \fi%
1367   \mkboth{\MakeUppercase\glossaryname}%
1368   {\MakeUppercase\glossaryname}%
1369   \chapter*{\glossaryname}%
1370   \addcontentsline{toc}{chapter}{\glossaryname}%
1371   \list{}%
1372   {\setlength{\listparindent}{0in}%
1373    \setlength{\labelwidth}{1.0in}%
1374    \setlength{\leftmargin}{1.5in}%
1375    \setlength{\labelsep}{0.5in}%
1376    \setlength{\itemindent}{0in}%
1377    \sloppy}%
1378   {\if@restonecol\twocolumn\fi}%
1379 \endlist}%
1380 %
1381 \renewenvironment{theindex}{%
1382   \if@twocolumn%
1383     \restonecolfalse%
1384   \else%
1385     \restonecoltrue%
1386   \fi%
1387   \twocolumn[\makeschapterhead{\indexname}]%
1388   \mkboth{\MakeUppercase\indexname}%
1389   {\MakeUppercase\indexname}%
1390   \thispagestyle{plain}\parindent\z@
1391   \addcontentsline{toc}{chapter}{\indexname}%
1392   \parskip\z@\relax .3\p@\relax
1393   \columnseprule \z@
1394   \columnsep 35\p@
1395   \let\item\idxitem%
1396   {\if@restonecol\onecolumn\else\clearpage\fi}%
1397 %
1398 \newcommand\local@universityname{Universidade Federal do Rio de Janeiro}%
1399 \newcommand\local@deptstring{Programa}%
1400 \newcommand\foreign@deptstring{Department}%
1401 \newcommand\local@cityname{Rio de Janeiro}%
1402 \newcommand\local@statename{RJ}%
1403 \newcommand\local@countryname{Brasil}%
1404 %
1405 \newcommand\frontcover@maintext{%
1406   \sloppy\nohyphens{\local@doctype\ de \@degreename\%
1407   \ifthenelse{\boolean{maledoc}}{apresentado}{apresentada}%
1408   ao Programa de P\o s-gradua\c{c}\ao em \local@deptname,%
1409   Coppe, da \local@universityname, como parte dos requisitos%
1410   necess\^arios \{a\} obten\{c\ c\}\{a\}o do t\it{t}ulo de%
1411   \local@degname\ em \local@deptname.}%
1412 }%
1413 %
1414 \newcommand\frontpage@maintext{%

```

```

1415 \noindent {\MakeUppercase{\local@doctype}}
1416 \ifthenelse{\boolean{maledoc}}{SUBMETIDO}{SUBMETIDA}
1417 \sloppy\nohyphens{AO CORPO DOCENTE DO INSTITUTO ALBERTO LUIZ COIMBRA
1418 DE P{,’ O}S-GRADUA{\c C}{\^ A}O E PESQUISA DE ENGENHARIA DA
1419 UNIVERSIDADE FEDERAL DO RIO DE JANEIRO COMO PARTE DOS REQUISITOS
1420 NECESS{\’ A}RIOS PARA A OBTEN{\c C}{\^ A}O DO GRAU DE
1421 {\MakeUppercase{\local@degnname}} EM CI{\^ E}NCIAS EM
1422 {\MakeUppercase{\local@deptname.}\par}}%
1423 }
1424 %
1425 \newcommand{\frontpage@bottomtext}{%
1426 \begin{center}
1427 {\MakeUppercase{\local@cityname, \local@statename\ -- \local@countryname}}\par
1428 {\MakeUppercase{\local@monthname\ DE \number\year}}
1429 \end{center}%
1430 }
1431 %
1432 \newcommand{\abstract@toptext}{%
1433 \noindent Resumo \ifthenelse{\boolean{maledoc}}{do}{da}
1434 \local@doctype\ \ifthenelse{\boolean{maledoc}}{apresentado}{apresentada}
1435 \sloppy\nohyphens{{\`a} Coppe/UFRJ como parte dos requisitos
1436 necess{\’ a}rios para a obten{\c c}{\^ a}o do grau de
1437 \local@degnname\ em Ci{\^ e}ncias (\@degree)}
1438 }
1439 \newcommand{\foreignabstract@toptext}{%
1440 \noindent \sloppy\nohyphens{Abstract of \foreign@doctype\ presented to
1441 Coppe/UFRJ as a partial fulfillment of the requirements for the
1442 degree of \foreign@degnname\ of Science (\@degree)}
1443 }
1444 %

1445 % \changes{v3.5}{2024/02/23}{New command annex}
1446 % \changes{v3.5.1}{2024/02/23}{New command annex now supports brazilian or english}
1447 \newcommand{\annex}{%
1448 \iflanguage{brazilian}{%
1449 \renewcommand{\appendixname}{Anexo}}
1450 \renewcommand{\appendixname}{Annex}}
1451 \appendix
1452 }

</class>

```

11 Glossary commands

```

1453 <*glossary>
1454 \ProvidesFile{coppe.ist}[2025/10/18 CoppeTeX v4.0 glossary file]
1455 actual '='
1456 quote '!'
1457 level '>'
1458 %%% delim_0 ", p. "
1459 delim_0 "\dotfill "
1460 lethead_flag 0
1461 headings_flag 0
1462 preamble

```

```

1463 "\n\\begin{theglossary}\\n  \\\makeatletter"
1464 postamble
1465 "\\n  \\\end{theglossary}\\n"
1466 
```

```

1467 % \section{Brazilian Terms}
1468 <*lang-br>

```

```

1469 \ProvidesFile{coppe-lang-br.def}[2025/10/18 CoppeTeX v4.0 localization: Brazilian]
1470 \ExplSyntaxOn

```

```

1471 % --- Departments

```

```

1472 \Coppe_dept_set:nnn {PESC}{br}{Engenharia de Sistemas e Computação}

```

```

1473 \Coppe_dept_set:nnn {PEB} {br}{Engenharia Biomédica}

```

```

1474 \Coppe_dept_set:nnn {PEC} {br}{Engenharia Civil}

```

```

1475 \Coppe_dept_set:nnn {PEE} {br}{Engenharia Elétrica}

```

```

1476 \Coppe_dept_set:nnn {PEM} {br}{Engenharia Mecânica}

```

```

1477 \Coppe_dept_set:nnn {PEMM}{br}{Engenharia Metalúrgica e de Materiais}

```

```

1478 \Coppe_dept_set:nnn {PEN} {br}{Engenharia Nuclear}

```

```

1479 \Coppe_dept_set:nnn {PENO}{br}{Engenharia Oceânica}

```

```

1480 \Coppe_dept_set:nnn {PPE} {br}{Planejamento Energético}

```

```

1481 \Coppe_dept_set:nnn {PEP} {br}{Engenharia de Produção}

```

```

1482 \Coppe_dept_set:nnn {PEQ} {br}{Engenharia Química}

```

```

1483 \Coppe_dept_set:nnn {PET} {br}{Engenharia de Transportes}

```

```

1484 \Coppe_dept_set:nnn {PENT}{br}{Engenharia de Nanotecnologia}

```

```

1485

```

```

1486 % --- Degree & doc types

```

```

1487 \Coppe_str_set:nnn {degnname/msc}{br}{Mestrado}

```

```

1488 \Coppe_str_set:nnn {degnname/phd}{br}{Doutorado}

```

```

1489 \Coppe_str_set:nnn {doctype/msc}{br}{Dissertação}

```

```

1490 \Coppe_str_set:nnn {doctype/phd}{br}{Tese}

```

```

1491

```

```

1492 % --- Labels

```

```

1493 \Coppe_str_set:nnn {advisor_label}{br}{Orientador}

```

```

1494 \Coppe_str_set:nnn {advisors_label}{br}{Orientadores}

```

```

1495 \Coppe_str_set:nnn {approved_by}{br}{Aprovada por}

```

```

1496 \Coppe_str_set:nnn {listabbreviationname}{br}{Lista de Abreviaturas}

```

```

1497 \Coppe_str_set:nnn {listsymbolname}{br}{Lista de Símbolos}

```

```

1498 \Coppe_str_set:nnn {glossaryname}{br}{Glossário}

```

```

1499 \Coppe_str_set:nnn {degperson/msc/m}{br}{Mestre}

```

```

1500 \Coppe_str_set:nnn {degperson/msc/f}{br}{Mestra}

```

```

1501 \Coppe_str_set:nnn {degperson/phd/m}{br}{Doutor}

```

```

1502 \Coppe_str_set:nnn {degperson/phd/f}{br}{Doutora}

```

```

1503 \ExplSyntaxOff

```

```

1504 
```

12 English Terms

```

1505 <*lang-en>

```

```

1506 \ProvidesFile{Coppe-lang-en.def}[2025/10/18 CoppeTeX v4.0 localization: English]

```

```

1507 \ExplSyntaxOn

```

```

1508 % --- Departments

```

```

1509 \Coppe_dept_set:nnn {PESC}{en}{Systems Engineering and Computer Science}

```

```

1510 \Coppe_dept_set:nnn {PEB} {en}{Biomedical Engineering}

```

```

1511 \Coppe_dept_set:nnn {PEC} {en}{Civil Engineering}

```

```

1512 \Coppe_dept_set:nnn {PEE} {en}{Electrical Engineering}

```

```

1513 \Coppe_dept_set:nnn {PEM} {en}{Mechanical Engineering}

```

```

1514 \Coppe_dept_set:nnn {PEMM}{en}{Metallurgical and Materials Engineering}
1515 \Coppe_dept_set:nnn {PEN} {en}{Nuclear Engineering}
1516 \Coppe_dept_set:nnn {PENO}{en}{Ocean Engineering}
1517 \Coppe_dept_set:nnn {PPE} {en}{Energy Planning}
1518 \Coppe_dept_set:nnn {PEP} {en}{Production Engineering}
1519 \Coppe_dept_set:nnn {PEQ} {en}{Chemical Engineering}
1520 \Coppe_dept_set:nnn {PET} {en}{Transportation Engineering}
1521 \Coppe_dept_set:nnn {PENT}{en}{Nanotechnology Engineering}
1522
1523 % --- Degree & doc types
1524 \Coppe_str_set:nnn {degnname/msc}{en}{Master}
1525 \Coppe_str_set:nnn {degnname/phd}{en}{Doctorate}
1526 \Coppe_str_set:nnn {doctype/msc}{en}{Dissertation}
1527 \Coppe_str_set:nnn {doctype/phd}{en}{Thesis}
1528
1529 % --- Labels
1530 \Coppe_str_set:nnn {advisor_label}{en}{Advisor}
1531 \Coppe_str_set:nnn {advisors_label}{en}{Advisors}
1532 \Coppe_str_set:nnn {approved_by}{en}{Approved by}
1533 \Coppe_str_set:nnn {listabbreviationname}{en}{List of Abbreviations}
1534 \Coppe_str_set:nnn {listsymbolname}{en}{List of Symbols}
1535 \Coppe_str_set:nnn {glossaryname}{en}{Glossary}
1536 \Coppe_str_set:nnn {degperson/msc/m}{en}{Master}
1537 \Coppe_str_set:nnn {degperson/msc/f}{en}{Master}
1538 \Coppe_str_set:nnn {degperson/phd/m}{en}{Doctor}
1539 \Coppe_str_set:nnn {degperson/phd/f}{en}{Doctor}
1540 \ExplSyntaxOff
1541 
```

13 Spanisg Terms

```

1542 <*lang-es>
1543 \ProvidesFile{coppe-lang-es.def}[2025/10/18 CoppeTeX v4.0 localization: Spanish]
1544 \ExplSyntaxOn
1545 % --- Departments
1546 \Coppe_dept_set:nnn {PESC}{es}{Ingeniería de Sistemas y Computación}
1547 \Coppe_dept_set:nnn {PEB} {es}{Ingeniería Biomédica}
1548 \Coppe_dept_set:nnn {PEC} {es}{Ingeniería Civil}
1549 \Coppe_dept_set:nnn {PEE} {es}{Ingeniería Eléctrica}
1550 \Coppe_dept_set:nnn {PEM} {es}{Ingeniería Mecánica}
1551 \Coppe_dept_set:nnn {PEMM}{es}{Ingeniería Metalúrgica y de Materiales}
1552 \Coppe_dept_set:nnn {PEN} {es}{Ingeniería Nuclear}
1553 \Coppe_dept_set:nnn {PENO}{es}{Ingeniería Oceánica}
1554 \Coppe_dept_set:nnn {PPE} {es}{Planificación Energética}
1555 \Coppe_dept_set:nnn {PEP} {es}{Ingeniería de Producción}
1556 \Coppe_dept_set:nnn {PEQ} {es}{Ingeniería Química}
1557 \Coppe_dept_set:nnn {PET} {es}{Ingeniería de Transportes}
1558 \Coppe_dept_set:nnn {PENT}{es}{Ingeniería de Nanotecnología}
1559 % --- Degree & doc types
1560 \Coppe_str_set:nnn {degnname/msc}{es}{Maestría}
1561 \Coppe_str_set:nnn {degnname/phd}{es}{Doctorado}
1562 \Coppe_str_set:nnn {doctype/msc}{es}{Tesis de maestría}
1563 \Coppe_str_set:nnn {doctype/phd}{es}{Tesis doctoral}
1564 % --- Labels

```

```

1565 \Coppe_str_set:nnn {advisor_label}{es}{Director}
1566 \Coppe_str_set:nnn {advisors_label}{es}{Directores}
1567 \Coppe_str_set:nnn {approved_by}{es}{Aprobada por}
1568 \Coppe_str_set:nnn {listabbreviationname}{es}{Lista de abreviaturas}
1569 \Coppe_str_set:nnn {listsymbolname}{es}{Lista de símbolos}
1570 \Coppe_str_set:nnn {glossaryname}{es}{Glosario}
1571 \Coppe_str_set:nnn {degperson/msc/m}{es}{Maestro}
1572 \Coppe_str_set:nnn {degperson/msc/f}{es}{Maestra}
1573 \Coppe_str_set:nnn {degperson/phd/m}{es}{Doctor}
1574 \Coppe_str_set:nnn {degperson/phd/f}{es}{Doctora}
1575 \ExplSyntaxOff
1576 
```

14 Bibfile

```

1577 <*bibs>
1578 \ProvidesFile{coppe.bib}[2025/10/18 CoppeTeX v4.0 Biblatex File]
1579 %
1580 % This is file ‘coppe.bib’.
1581 %
1582 % Bibliographic references for the documentation.
1583 %
1584 % Copyright (C) 2011 CoppeTeX Project and any individual authors listed
1585 % elsewhere in this file.
1586 %
1587 % This program is free software; you can redistribute it and/or modify
1588 % it under the terms of the GNU General Public License version 3 as
1589 % published by the Free Software Foundation.
1590 %
1591 % This program is distributed in the hope that it will be useful,
1592 % but WITHOUT ANY WARRANTY; without even the implied warranty of
1593 % MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
1594 % GNU General Public License version 3 for more details.
1595 %
1596 % You should have received a copy of the GNU General Public License
1597 % version 3 along with this package (see COPYING file).
1598 % If not, see <http://www.gnu.org/licenses/>.
1599 %
1600 % $URL$
1601 % $Id$
1602 %
1603 % Author(s): Vicente H. F. Batista
1604 %             George O. Ainsworth Jr.
1605 %
1606
1607 @book{ KNU86a,
1608   author = "Donald E. Knuth",
1609   title = "The {{\TeX}book}",
1610   publisher = "Addison-Wesley",
1611   address = "Reading, MA",
1612   year = "1984",
1613 }
1614
1615 @book{ KNT69a,

```

```

1616 author = "Leslie Lamport",
1617 title = "{\LaTeX \rm:} {A} Document Preparation System",
1618 publisher = "Addison-Wesley",
1619 address = "Reading, MA",
1620 year = 1986
1621 }
1622
1623 @manual{ TNR08a,
1624 author = "CPGP/Coppe/UFRJ",
1625 title = "Norma para a Elabora{\c c}\~ao Gr\'afica de Teses",
1626 address = "Rio de Janeiro, RJ, Brasil",
1627 month = "Julho",
1628 year = 2008,
1629 note = "Revisada em 10/09/2010",
1630 }
1631
1632 @unpublished{ PAT88a,
1633 author = "Oren Patashnik",
1634 title = "BibTeXing",
1635 note = "Documentation for general Bib\TeX\ users",
1636 month = feb,
1637 year = 1988
1638 }
1639
1640 @unpublished{ PAT88b,
1641 author = "Oren Patashnik",
1642 title = "Designing BibTeX Styles",
1643 note = "The part of BibTeX 's documentation
1644 that's not meant for general users",
1645 month = feb,
1646 year = 1988
1647 }
1648
1649 @book{ WW79a,
1650 author = "Strunk, Jr., William and E. B. White",
1651 title = "The Elements of Style",
1652 publisher = "Macmillan",
1653 edition = 3,
1654 year = 1979
1655 }
1656
1657 @misc{TeX:FAQ,
1658 title = "{$\backslash$TeX} {Frequently} {Asked} {Questions}",
1659 url = "\http://www.tex.ac.uk/cgi-bin/texfaq2html?introduction=yes",
1660 key = "TeX FAQ",
1661 }
1662
1663 @misc{normassibi,
1664 title = {Normas SIBI}
1665 author = {{SIBI}}
1666 year = 2025
1667 }
1668 ⟨“bibs⟩

```

Acknowledgments

Thanks to all COPPET_{EX} users who have reported their experience with this class. We also thank to professor Fernando Lizarralde and Heiko Oberdiek for their helpful comments. The authors would like to thank the National Council for Scientific and Technological Development (CNPq) of Brazil.

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Change History

v0.0		examiners test.	26		
	General: Creation Date.	1	Generalization.	26	
v0.1					
	General: Documentation:		v0.4	General: Beta documentation.	1
	bibliography fixed, title				
	translation.	1	v0.5	abstract: Changed from macro to	
	Sourceforge submission.	1		environment.	29
v0.2				\backmatter: Added mainmatter	
	General: Unification of the code			pages counter.	25
	for the list of symbols and			foreignabstract: Changed from	
	abbreviations.	1		macro to environment.	30
v0.3					
	General: Added ‘draft’ option.	1	v1.0	General: First COPPETEX release.	1
	\maketitle: Added number of				

v2.0		without degree.	23	
	General: COPPE _{TEX} release 2.0. . .	1	v3.1	
v2.1		General: Included a sort key in syml	23	
	General: COPPE _{TEX} release 2.1: Matching the new rules.	1	v3.2	
	\advisor: Advisors, co-advisors, co-co-advisors, etc., all of them are simply considered advisors.	23	v3.3	
v2.2	General: Matching new guidelines, including new logo.	1	v3.4	
v2.2.2	General: Fixed some text constants in .bib and documented it here.	1	v3.4.1	
v3.0	General: Added new course on Nanotechnology.	23	General: Fix english option to consider brazilian a second language, describe it in document	20
	Added support for monographs in English.	20	v4.0	
	New approval page layout.	27	General: A lot of changes to follow new ABNT and UFRJ rules . . .	1
	\examiner: Examiners expansion			