

Document Type

Title

Subtitle

*Authors:*

Name SURNAME, degree

Name SURNAME

Name SURNAME

Name SURNAME

*Support:*

UF **m** G

2018-01-10

This work was supported by UFMG.

The contents of this document is copyrighted by ENACOM. No portion of the content may be directly or indirectly copied, published, reproduced, modified, performed, displayed, sold, transmitted, published, broadcast, rewritten for broadcast or publication or redistributed in any medium.

© 2018 ENACOM

## Updates

DD/MM/YYYY Author Name

- i. initial version

DD/MM/YYYY Author Name

- i. update

DD/MM/YYYY Author Name

- i. update 1
- ii. update 2
- iii. update 3

## Contents

Updates	3
Contents	4
Symbology	6
Abbreviations	7
<b>1 Template overview</b>	<b>8</b>
1.1 Document options	8
1.2 Title items	9
1.3 Document items	9
1.4 Options for cleaning up document	10
<b>2 LaTeX elements</b>	<b>10</b>
2.1 Sectioning	10
2.2 List Structures	10
2.2.1 Enumeration	10
2.2.2 Description	11
2.2.3 Itemization	11
2.3 Theorems and proofs	12
2.3.1 Definition	12
2.3.2 Theorem	12
2.3.3 Lemma	12
2.3.4 Corollary	13
2.4 Footnote	13
2.5 Equations	13
2.6 Table	13
2.7 Text styles	14
2.8 Math commands	15
2.8.1 Special math set commands	15
2.8.2 Special math matrix commands	15
2.8.3 Special math function commands	15
2.8.4 Special math vector or complex commands	16
2.9 Figure	16

2.10 Codes . . . . .	17
2.10.1 Python code . . . . .	17
2.10.2 Matlab Code . . . . .	17
2.11 Algorithm . . . . .	18
2.12 Page orientation . . . . .	20
2.13 Bibliography . . . . .	21
<b>References</b>	<b>22</b>

## Symbology

$\mathcal{C}$  a class

$\mathbb{R}$  a set

$M$  a matrix

$v$  a vector

## Abbreviations

ANSI American National Standards Institutean abbreviation

## 1 Template overview

### 1.1 Document options

- document type:
  - “accept”
  - “article”
  - “book”
  - “handout”
  - “hh”
  - “letter”
  - “notes”
  - “poster”
  - “record”
  - “report” (default)
  - “slides”
  - “thesis”
- language:
  - “english”
  - “portuguese” (default)
- font size:
  - “10pt”
  - “11pt” (default)
  - “12pt”
- color:
  - “colorful” (default)
  - “grayscale”



## 1.2 Title items

- `\type{<the document type name>}`
- `\title{<the title>}`
- `\subtitle{<the subtitle>}`
- `\author[<position>]{<name>}{<surname>}`
- `\advisor[<position>]{<name>}{<surname>}`
- `\partner{<name>}{<figure>}`
- `\support{<name>}{<figure>}`
- `\date{<the date>}`
- `\local{<the local>}`

## 1.3 Document items

- `\copyrights{<the copyrights text>}`
- `\abstract{<the abstract text>}`
- `\ack{<the extra acknowledgement text>}`
- `\bib{<the bib-file name>}`
- `\update{<the date>}{<the author name>}{  
  \item <the update 1 brief description>  
  \item <the update 2 brief description>  
  ...}`
- `\symbols{  
  $<symbol>$ & <meaning>\\  
  $<symbol>$ & <meaning>\\  
  ...}`
- `\abbreviations{  
  <abbreviation> & <meaning>\\  
  <abbreviation> & <meaning>\\  
  ...}`

## 1.4 Options for cleaning up document

- “nobackpage” for back page removal;
- “nosummary” for summary page removal;
- “nocopyright” for copyright text removal;
- “noupdate” for update history section removal;
- “noindex” for remissive index section removal;
- “lean” for blank pages removal;
- “nofiglist” for list of figures removal;
- “notablist” for list of tables removal.

## 2 LaTeX elements

### 2.1 Sectioning

- `\chapter{<chapter name>}`
- `\section{<section name>}`
- `\subsection{<subsection name>}`
- `\subsubsection{<subsubsection name>}`
- `\paragraph{<paragraph name>}`

### 2.2 List Structures

#### 2.2.1 Enumeration

The  $\LaTeX$  code

```
\begin{enumerate}
  \item first
  \begin{enumerate}
    \item first first
    \begin{enumerate}
      \item first first first
    \end{enumerate}
  \end{enumerate}
\end{enumerate}
\item second
\end{enumerate}
```

results in

- i. first
  - α. first first
    - 1. first first first
- ii. second

### 2.2.2 Description

The  $\LaTeX$ code

```
\begin{description}  
  \item [item] description  
  \item [item] description  
\end{description}
```

results in

**item** description

**item** description

### 2.2.3 Itemization

The  $\LaTeX$ code

```
\begin{itemize}  
  \item item  
  \begin{itemize}  
    \item subitem  
    \begin{itemize}  
      \item subsubitem  
    \end{itemize}  
  \end{itemize}  
\end{itemize}
```

results in

- item
  - subitem
    - subsubitem
- item

## 2.3 Theorems and proofs

### 2.3.1 Definition

The  $\LaTeX$ code

```
\begin{definition}[something]
  This is the definition of something.
\end{definition}
```

results in

**Definition 1** (something). *This is the definition of something.*

### 2.3.2 Theorem

The  $\LaTeX$ code

```
\begin{theorem}[someone]
  This is the statement of someone's theorem.
\end{theorem}
\begin{proof}
  This is the proof of someone's theorem.
\end{proof}
```

results in

**Theorem 1** (someone). *This is the statement of someone's theorem.*

*Proof.* This is the proof of someone's theorem. □

### 2.3.3 Lemma

The  $\LaTeX$ code

```
\begin{lemma}[someone]
  This is the statement of someone's lemma.
\end{lemma}
\begin{proof}
  This is the proof of someone's lemma.
\end{proof}
```

results in

**Lemma 1** (someone). *This is the statement of someone's lemma.*

*Proof.* This is the proof of someone's lemma. □

### 2.3.4 Corollary

The  $\LaTeX$ code

```
\begin{corollary}[someone]
  This is the statement of someone's corollary.
\end{corollary}
```

results in

**Corollary 1** (someone). *This is the statement of someone's corollary.*

### 2.4 Footnote

Foot notes are created with command “footnote” and they are reference by a superscripted number<sup>1</sup>.

### 2.5 Equations

- use “equation” or “align” to place a numbered equation;

$$f(x) = x_1 + \frac{x_3^3}{3} + \frac{x_5^5}{5}; \quad (1)$$

- use command “nonumber” to unnumber equations;
- use command “label” to assign a label to an equation;

$$\text{minimize } f(x) \quad (2)$$

$$\text{subject to } g(x) \leq 0 \quad (3)$$

$$h(x) = 0 \quad (4)$$

$$x \in \mathbb{R}^n; \quad (5)$$

- use command “eqref” or “autoref” to refer to a numbered equation through its label:  
Example “eqref”: (2).  
Example “autoref”: [Equation 2](#).

### 2.6 Table

- use command “tabular” to insert a table;
- use environment “table” to support caption and references;

---

<sup>1</sup>This is a foot note. It is always positioned on the bottom of the column and page where its reference occurs. Long foot notes may have more than one text line.

- use command “caption” to write a table caption;
- use command “label” to assign a label to a table;

activity	month
	1 2
first after line break	x
second: two lines due to width	x
third	x
fourth	x

Table 1: A table.

- use command “autoref” to refer to a table through its label:  
Example “autoref”: [Table 1](#).

## 2.7 Text styles

Special text mode set commands, ([Table 2](#)).

code	result
<code>\qm{a quoted tex}</code>	<i>“a quoted tex”</i>
<code>\code{a code text}</code>	<i>“a code text”</i>
<code>\textit{an italic text}</code>	<i>an italic text</i>
<code>\textbf{a bold face text}</code>	<b>a bold face text</b>
<code>\textbackslash</code>	<code>\</code>
<code>\%</code>	<code>%</code>
<code>\\$</code>	<code>\$</code>
<code>\&amp;</code>	<code>&amp;</code>

Table 2: Special text set commands.

## 2.8 Math commands

### 2.8.1 Special math set commands

code	result
<code>\set{R}</code>	$\mathbb{R}$
<code>\class{G}</code>	$\mathcal{G}$
<code>\nin</code>	$\notin$
<code>\card{\set{S}}</code>	$ \mathbb{S} $
<code>\floor{n}</code>	$\lfloor n \rfloor$
<code>\ceil{n}</code>	$\lceil n \rceil$

Table 3: Special math set commands.

### 2.8.2 Special math matrix commands

code	result
<code>\T{M}</code>	$M^T$
<code>\inv{M}</code>	$M^{-1}$
<code>\invT{M}</code>	$M^{-T}$
<code>\diag{M}</code>	$\text{diag}(M)$

Table 4: Special math matrix commands.

### 2.8.3 Special math function commands

code	result
<code>\e^{\pi}</code>	$e^\pi$
<code>\gradient f</code>	$\nabla f$
<code>\hessian f</code>	$\mathcal{H}f$
<code>\mi f(x)</code>	minimize $f(x)$
<code>\ma f(x)</code>	maximize $f(x)$
<code>\sto g(x) \leq 0</code>	subject to $g(x) \leq 0$

Table 5: Special math function commands.

### 2.8.4 Special math vector or complex commands

	code	result
	<code>\opt{x}</code>	$x^*$
	<code>\conj{z}</code>	$z^*$
	<code>\real(z)</code>	$\text{real}(z)$
	<code>\imag(z)</code>	$\text{imag}(z)$
	<code>\abs{z}</code>	$ z $
	<code>\norm{v}</code>	$\ v\ $
	<code>\mean_i v_i</code>	$\text{mean}_i v_i$
	<code>\dsum_{i=1}^n v_i</code>	$\sum_{i=1}^n v_i$
	<code>\dprod_{i=1}^n v_i</code>	$\prod_{i=1}^n v_i$

Table 6: Special math vector or complex commands.

## 2.9 Figure

- use command “`includegraphics`” to insert a figure;
  - no need to use file extensions;
  - supported files: PDF, EPS, PNG and JPG (search in this order);
- use environment “`figure`” to support caption and references;
  - use command “`caption`” to write a figure caption;
  - use command “`label`” to assign a label to a figure;

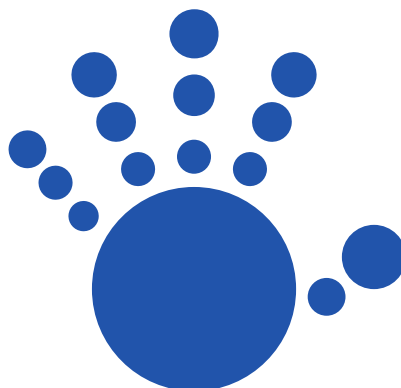


Figure 1: Figure 1

- use command “`autoref`” to refer to a figure through its label:  
Example: [Figure 1](#).



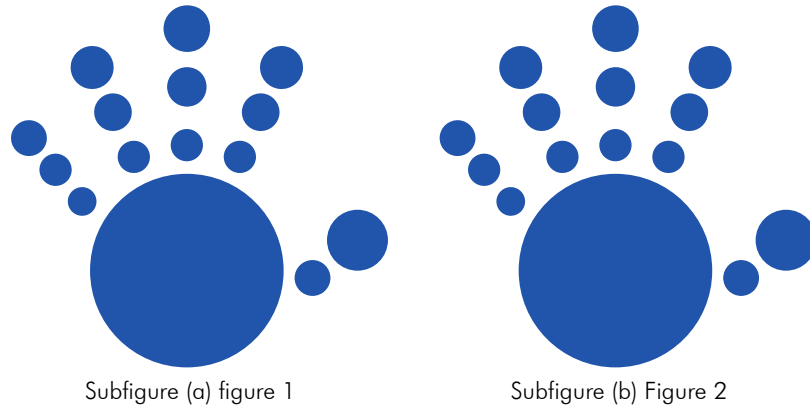


Figure 2: Figure 2

## 2.10 Codes

### 2.10.1 Python code

- use “`lstlisting`” for Python code

Writing code in  $\text{\LaTeX}$  document

```
\begin{lstlisting}[language=python]
count = 0
while count < 5:
    print(count)
    count += 1 # comment
\end{lstlisting}
```

results in

```
count = 0
while count < 5:
    print(count)
    count += 1 # comment
```

### 2.10.2 Matlab Code

- use “`mcode`” for MATLAB code listings

Writing code in  $\text{\LaTeX}$  document

```
\begin{mcode}
function y = average(x)
    if ~isvector(x)
        error('Input must be a vector')
    end
    y = sum(x)/length(x);
end
\end{mcode}
```

results in

```
function y = average(x)
if ~isvector(x)
    error('Input must be a vector')
end
y = sum(x)/length(x);
end
```

## 2.11 Algorithm

- environments:
  - use “algorithm” to encapsulate input, output and code;
  - use “algorithmic” to encapsulate code.
- commands:
  - use “State” to start a new algorithm line;
  - use “Comment” to place a line comment;
  - use “gets” for attributions.
- keywords:
  - “For”, “EndFor”;
  - “If”, “Else”, “EndIf”;
  - “Return”, “Break”; “Continue”.

The  $\LaTeX$  code

```
\begin{algorithm}
\caption{Evaluation of sinus of a sum.}
\label{alg.Sinus}
\algorithminput{$a$ & first part \& $b$ & second part\&}
\algorithmoutput{$s$ & sum of the two parts \& $t$ & sinus of the sum\&}
\begin{algorithmic}[1]
\State $s$ \gets $a$ + $b$ \Comment{sum of input arguments}
\State $t$ \gets 0$
\For{$i = 1, 2\dots$}
\State $t$ \gets $t$ +  $(-1)^{i+1} \frac{s^{2i-1}}{(2i-1)!}$  \Comment{Taylor series for
sinus}
\EndFor
\State \Return $s$ and $t$
\end{algorithmic}
\end{algorithm}
```

results in

---

**Algorithm 1** Evaluation of sinus of a sum.

---

**Input**

- $a$  first part
- $b$  second part

**Output**

- $s$  sum of the two parts
- $t$  sinus of the sum

1:  $s \leftarrow a + b$

▷ sum of input arguments

2:  $t \leftarrow 0$

3: **for**  $i = 1, 2, \dots$  **do**

4:      $t \leftarrow t + (-1)^{i+1} \frac{s^{2i-1}}{(2i-1)!}$

▷ Taylor series for sinus

5: **end for**

6: **return**  $s$  and  $t$

---

## 2.12 Page orientation

This is a page in landscape. The code for this is:

```
\begin{landscape}  
  \subsection{Page orientation}  
  This is a page in landscape. The code for this is:  
\end{landscape}
```

## 2.13 Bibliography

- use command “bib” in preamble to specify bib-file;
- use command “cite” to cite a reference as their authors;  
Surname and Surname, 2017a.  
Surname and Surname, 2017b.
- use command “citet” to cite a reference as a bracket;  
[Surname and Surname, 2017a].  
[Surname and Surname, 2017b].
- separate adjacent citations by commas;  
[Surname and Surname, 2017a,b].

## References

Surname, N. and Surname, N. (2017a). An article title. *The Journal*, pages 0--10.

Surname, N. and Surname, N. (2017b). *A book title*. The Publisher.

