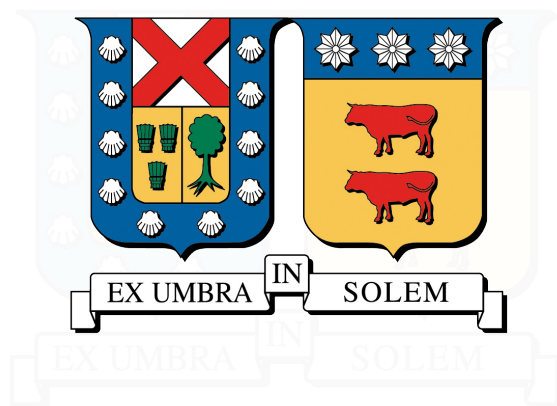


UNIVERSIDAD TÉCNICA FEDERICO SANTA MARÍA
DEPARTAMENTO DE ELECTRÓNICA E INFORMÁTICA
CONCEPCION - CHILE



**TÍTULO DE MEMORIA (EL TÍTULO SÓLO PUEDE TENER UN MÁXIMO DE
3 LÍNEAS)**

NOMBRES Y APELLIDOS DEL (DE LA) AUTOR(A)

MEMORIA PARA OPTAR AL TÍTULO DE
TÉCNICO UNIVERSITARIO EN TELECOMUNICACIONES Y REDES

PROFESOR GUÍA : SRA. XXXXXXXX XXXXXXXXX X.
PROFESOR CORREFERENTE : SR. XXXXXXXX XXXXXXXXX X.

5 de mayo de 2020



A mi familia ...

[Puede ocupar este espacio para escribir una dedicatoria (opcional). Revise el archivo maestro `memoria.tex`]

(AGRADECIMIENTOS) [Título es opcional]

Agradezco a quienes contribuyeron para ir mejorando esta plantilla hecha en \LaTeX .

Contribuciones a este documento:

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Gracias!!!

Para el impaciente ...

Descargar esta y otras plantillas desde : <https://del.ilab.cl/git/public/latex.git>

Para los interesados en `git` revisar [Try GitHub \(2017\)](#).

RESUMEN EJECUTIVO

Plantilla L^AT_EX para las Memorias y Tesis del Departamento de Electrónica e Informática, UTFSM.

Se incluyen también algunos ejemplos de cómo incorporar tablas y gráficos en distintas presentaciones respetando las Normas de Biblioteca para Memorias y Tesis de la UTFSM.

Palabras Clave. L^AT_EX, Plantilla para Memoria, Departamento de Electrónica e Informática, UTFSM.

Para el impaciente ...

Abra el archivo de configuración `config.tex` para cambiar título, autor, fecha, etc. de la portada y del documento en general.

Abra y compile el documento maestro `memoria.tex`. Si hay errores, verifique primero que todos los paquetes L^AT_EX han sido instalados.

Si desea omitir alguna sección (dedicatoria, agradecimientos, etc.), revise el documento maestro `memoria.tex` y agregue o comente (o elimine) las líneas correspondientes.

Por ejemplo, para eliminar esta sección, borre las líneas:

```
_____ memoria.tex (extracto) _____  
\section*{RESUMEN EJECUTIVO}  
\insertFile[plain]{resumen}}
```

¡Importante! [LEAME]

Impresión por un solo lado.

Este documento está hecho para usar impresión por ambas caras del papel, en el caso que desee usar una configuración que use solo una cara debe cambiar el archivo de clase `thesis_ut fsm.cls` y especificar la opción (“*oneside*”).

Codificación de caracteres.

Todos los archivos `*.tex` de esta plantilla han sido preparados ocupando la codificación de caracteres por defecto *unicode* (UTF-8). Windows (y algunas versiones de OSX) ocupan otro tipo de codificación (ej. *Windows-1252* o *Mac Roman*).

Si deseas ocupar esta plantilla y encuentras problemas con los caracteres acentuados, entonces puedes optar por una de estas tres alternativas:

- i) cambiar tu editor (TexMaker, TexStudio, TexShop, etc.) para que ocupe UTF-8 como codificación de caracteres por defecto; o
- ii) cambiar la codificación de cada documento `*.tex` para que ocupe la codificación nativa de tu sistema operativo; y, modificar el archivo `config.tex` la línea que dice:

```
\usepackage[utf8x]{inputenc}
```

- iii) escribir todo ocupando caracteres pre-acentuados (ej. `\'a` en lugar de á).

Recuerde:

Mezclar documentos de distintas codificaciones puede generar muchos problemas al momento de compilar.

ABSTRACT

This is a \LaTeX thesis template for the Departamento de Electrónica e Informática, UTFSM. A few examples about the inclusion of figures and tables are also provided.

(The abstract can be edited by opening the file `includes/abstract.tex` .)

Keywords. \LaTeX , Thesis Template, Departamento de Electrónica e Informática, USM

Instrucciones para la Plantilla.

Editar el archivo `/includes/abstract.tex` para modificar los contenidos de esta sección.

Si no desea incluir un abstract, editar el archivo `/memoria.tex` , y comentar o borrar la sección que se muestra a continuación.

```
_____ /memoria.tex (extracto) _____  
\section*{ABSTRACT}  
\insertFile[plain]{abstract} % Archivo abstract.tex  
_____
```



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Capítulo 1

¿Cómo usar esta Plantilla?

1.1. Obtener el código fuente L^AT_EX

Primero, por supuesto, obtener la plantilla y los archivos de apoyo desde:

<https://jaimercz.github.io/utfsm-thesis>

O, mejor aún, ocupando `git` :

```
git clone https://github.com/jaimercz/utfsm-thesis
```

1.2. Configuración

La configuración básica (nombre del autor, comisión evaluadora, fecha, grado y título de la memoria o tesis) está en el archivo `config.tex` . Modifique ahí los parámetros básicos de este documento (que afectan la portada y los meta-datos PDF).

1.3. Compilar (primera vez)

Abra el documento `memoria.tex` con un editor de texto o editor de L^AT_EX de su preferencia.

Proceda con la compilación:

Consola (Shell) o Línea de comandos

```
$ pdflatex memoria.tex
$ bibtex memoria
$ pdflatex memoria.tex
$ pdflatex memoria.tex
```

Si hay errores, lo más probable es que le falte alguno de las paquetes necesarios que ocupa esta plantilla.

1.4. Modificación de contenidos

Abra el documento maestro (`memoria.tex`) y modificar o incluir los documentos que componen su memoria.

Por ejemplo, para incorporar un nuevo capítulo, simplemente puede agregarlo incorporando la siguiente línea en el documento maestro:

```
\input{includes/capitulo04}
```

```

                                memoria.tex      (extracto)
%-----
%      Cuerpo Principal (Main Matter)
%-----
\mainmatter
\pagestyle{fancy}

\input{includes/capitulo01}
\input{includes/capitulo02}
\input{includes/capitulo03}
%...      % Agregar aquí más capítulos

```

1.5. Para tomar en cuenta (Recomendaciones)

1.5.1. Impresión por ambos lados.

Este documento está preparado para ser impreso por ambos lados de una hoja (“*twoside*”). Para cambiar esto, en la “clase de documento”, reemplazar la palabra “*twoside*” por “*oneside*”. Es por esto que encontrará algunas hojas que están en blanco, aparentemente sin motivo.

```

                                memoria.tex      (extracto (continuación))
%-----
%% DOCUMENT CLASS
\documentclass[
    11pt,
    letterpaper,
    twoside
]{thesis_utfsm}
%-----

```

Es posible que debas cambiar otras configuraciones también para imprimir por un sólo lado. En particular aquellas páginas en blanco después de los agradecimientos y dedicatoria.

1.6. Codificación de caracteres.

Todos los archivos *.tex de esta plantilla han sido preparados ocupando la codificación de caracteres por defecto *unicode* (UTF-8). Windows (y algunas versiones de OSX) ocupan otro tipo de codificación (ej. *Windows-1252* o *Mac Roman*).

Si deseas ocupar esta plantilla y encuentras problemas con los caracteres acentuados, entonces puedes optar por una de estas tres alternativas:

- (i) cambiar tu editor (TexMaker, TexStudio, TexShop, etc.) para que ocupe UTF-8 como codificación de caracteres por defecto; o
- (ii) cambiar la codificación de cada documento *.tex para que ocupe la codificación nativa de tu sistema operativo; y, modifica la configuración (config.tex) dice:

```
\usepackage[utf8x]{inputenc} , por el texto \usepackage[latin1]{inputenc} .
```

- (iii) escribir todo ocupando caracteres pre-accentuados (ej. \’a en lugar de á).

Recuerda: Mezclar documentos de distintas codificaciones puede generarte muchos problemas al momento de compilar.

1.7. Requisitos

Los paquetes que se ocupan y son indispensables para la generación este documento están contenidos en el documento de clase `thesis_utfsm.cls`.

Para que funcione correctamente se requiere tener instaladas (como mínimo) las siguientes extensiones \LaTeX :

	Paquetes requeridos por <code>thesis_utfsm.sty</code>
<code>geometry</code>	% Márgenes y tamaño de páginas
<code>natbib</code>	% Bibliografía
<code>fontenc</code>	% Codificación de Caracteres
<code>inputenc</code>	% Métodos de entrada (acentos)
<code>fancyhdr</code>	% Encabezados 'Fancy'
<code>chngcntr</code>	% Formatos de Pie de Página
<code>booktabs</code>	% Tablas
<code>tabularx</code>	% Tablas
<code>multirow</code>	% Tablas con multi-columnas / multi-filas
<code>array</code>	% Matrices
<code>float</code>	% Imágenes Flotantes
<code>textcomp</code>	% Símbolos de uso común
<code>endnotes</code>	% Notas finales del documento
<code>paralist</code>	% Mejores Listados
<code>listings</code>	% Mejores Listados
<code>framed</code>	% Marcos
<code>fancybox</code>	% Marcos 'Fancy'
<code>verbatim</code>	% Código Fuente
<code>fancyvrb</code>	% Código Fuente 'Fancy'
<code>wrapfig</code>	% Figuras flotantes
<code>xcolor</code>	% Colores personalizados
<code>graphicx</code>	% Mejor inclusión de figuras
<code>subfig</code>	% Figuras con múltiples leyendas
<code>tikz</code>	% Diagramas vectoriales
<code>caption</code>	% Mejores leyendas para figuras y tablas
<code>tocbibind</code>	% Bibliografía en la Tabla de Contenidos
<code>rotating</code>	% Rotación de Tablas
<code>asmmath</code>	% Notación científica / matemática
<code>asmsymb</code>	% Símbolos matemáticos y letras griegas
<code>txfonts</code>	% Times New Roman (para sistemas distintos de Windows)
<code>microtype</code>	% Mejoras subliminales en el uso de fuentes
<code>parskip</code>	% Separación entre párrafos

La mayoría de las distribuciones \LaTeX traen estos paquetes por defecto, sin embargo, en Windows es posible que deba instalar algunos de ellos si ha instalado el archivo básico de MikTeX.

1.8. Diagramación

Este documento fue realizado usando \LaTeX ([LaTeX Project](#)), aunque puede fácilmente ser exportado a LyX ([LyX Project](#)). Para ver como transformarlo a Lyx, puede revisar el Wiki ([Wiki LyX](#)).

Usted necesitará un compilador de \LaTeX . Los más comúnmente ocupados son [MikTeX](#) (Windows) y [MacTeX](#) (Apple); Sistemas *nix (incluyendo linux) traen \TeX por defecto.

Para una referencia completa sobre \LaTeX , recomendamos el libro de [Lamport \(1994\)](#); aunque para solucionar problemas específicos, su mejor aliado es Internet.

También puede revisar [Roberts \(2005\)](#), [Oetiker et al. \(2006\)](#), y [Mittelbach et al. \(2004\)](#).

1.8.1. Figuras

La siguiente es una figura basada en el archivo `figures/logoind.png`. En este caso, la descripción de la figura va en la parte inferior (ver Figura 1.1).



Figura 1.1: Logotipo Departamento de Electrónica e Informática
(Fuente: Departamento de Electrónica e Informática)

La forma de incorporar la Figura 1.1 se muestra a continuación:

Incorporar Figura 1.1

```

1 \begin{figure}[h]
2 \centering
3 \includegraphics[width=.4\textwidth]{figures/logoind.png}
4 \caption[Logotipo Departamento de Electrónica e Informática]{Logotipo Departamento de Electrónica e Informática\\
5 {\scriptsize (Fuente: Departamento de Electrónica e Informática)}}
6 \label{fig:logoind2}
7 \end{figure}

```

Otra forma de incorporar figuras es mediante un `float`. En este caso, la figura es incorporada como una imagen “flotante” a un costado del texto (ver Figura 1.2).

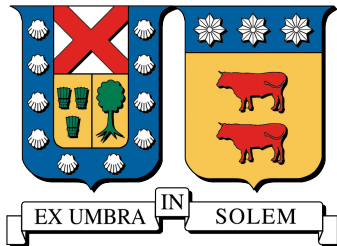


Figura 1.2: Logotipo USM (Float)

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

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

Figura 1.2

```

1 \begin{wrapfigure}{o}{.4\textwidth}
2 \vspace{-20pt}
3 \begin{spacing}{1}
4 \begin{center}
5 \includegraphics[width=.35\columnwidth]{figures/logousm.png}
6 \vspace{-10pt}
7 \caption[Logotipo USM (Float)]{}
8 \label{fig:logousm_float}
9 \end{center}
10 \end{spacing}
11 \vspace{-10pt}
12 \end{wrapfigure}

```

1.8.2. Tablas

La siguiente es una tabla o cuadro básica (ver Tabla 1.1). Notar las referencias cruzadas y el título de la tabla en la parte superior.

Tabla 1.1: Tabla de Temperaturas

DAY	MIN TEMP	MAX TEMP	SUMMARY
Monday	11C	22C	A clear day with lots of sunshine. However, the strong breeze will bring down the temperatures.
Tuesday	9C	19C	Cloudy with rain, across many northern regions. Clear spells across most of Scotland and Northern Ireland, but rain reaching the far northwest.
Wednesday	10C	21C	Rain will still linger for the morning. Conditions will improve by early afternoon and continue throughout the evening.

Figura 1.2 Alternative

```

1 \begin{table}[h!]
2   \caption[Ejemplo: Tabla de Temperaturas]{Tabla de Temperaturas}
3   \label{tbl:temperaturas}
4   \begin{tabularx}{\linewidth}{@{} l c c X @{}}
5     \toprule
6     \textbf{\textsc{Day}} & \textbf{\textsc{Min Temp}} &
7     & \textbf{\textsc{Max Temp}} & \textbf{\textsc{Summary}} \\
8     \hline\hline
9     Monday & 11C & 22C & A clear day with lots of sunshine.
10    However, the strong breeze will bring down the temperatures. \\
11    Tuesday & 9C & 19C & Cloudy with rain, across many northern regions. Clear spells
12    across most of Scotland and Northern Ireland,
13    but rain reaching the far northwest. \\
14    Wednesday & 10C & 21C & Rain will still linger for the morning.
15    Conditions will improve by early afternoon and continue
16    throughout the evening. \\
17    \bottomrule
18  \end{tabularx}
19 \end{table}
20
```

1.8.2.1. Rotación de Tablas

En caso de tener tablas muy grandes, o si necesita una tabla rotada, puedes ocupar `sidewaystable` (Tabla 1.2).

Tabla 1.2 Tabla Rotada

```

1 \begin{sidewaystable}
2   \centering
3   \caption[Ejemplo: Rotación de Tablas]{Rotación de Tablas}
4   \label{tbl:example-sidewaystable}
5   \begin{tabularx}{\columnwidth}{@{}XX@{}}
6     \toprule
7     \textbf{Column 1} & \textbf{Column 2} \\
8     \hline
9     \hline
10    Second First & Second Second \\
11    \blindtext & \blindtext \\
12    \bottomrule
13  \end{tabularx}
14 \end{sidewaystable}

```

Tabla 1.2: Rotación de Tablas

Column 1	Column 2
Second First <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.</p>	Second Second <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.</p>



1.8.3. Opciones Avanzadas para Gráficos

Los paquetes TikZ y PGF ofrecen alternativas para la creación de gráficos con las más diversas formas y opciones. Para ver opciones consultar www.texample.net/tikz/.

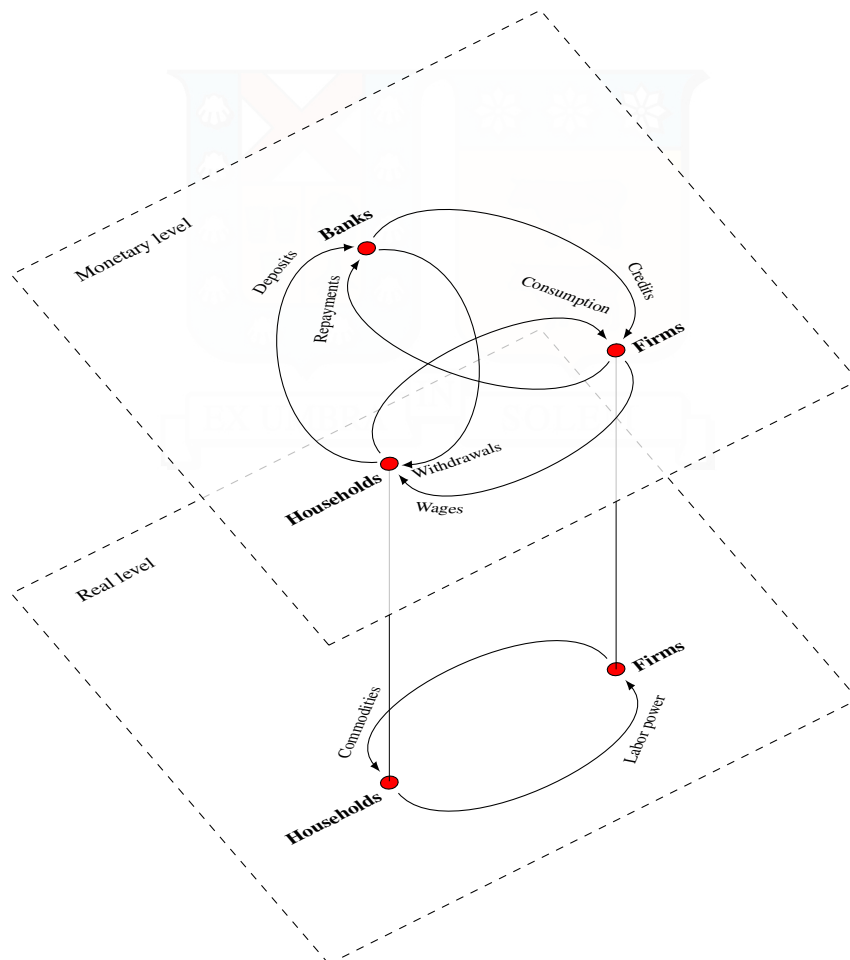


Figura 1.3: Gráficos Avanzados con Tikz

(Fuente: www.texample.net)

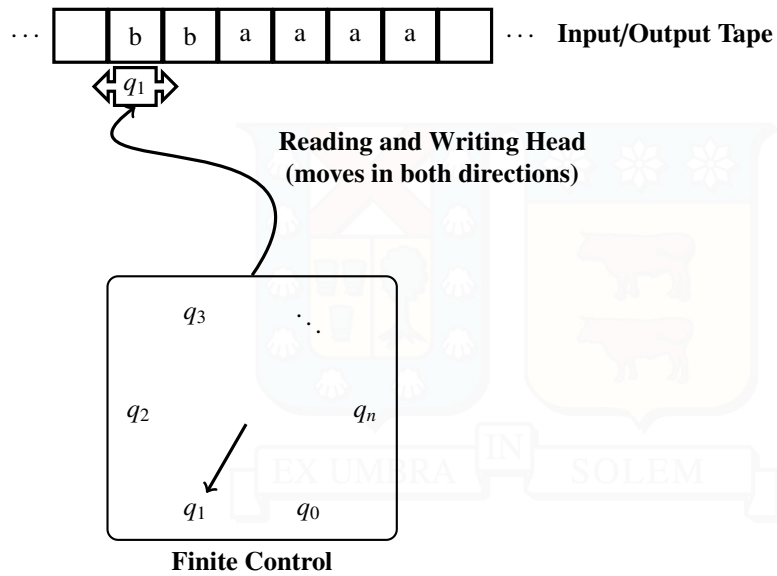


Figura 1.4: Diagrama de la Máquina de Turing
(Fuente: www.texample.net)

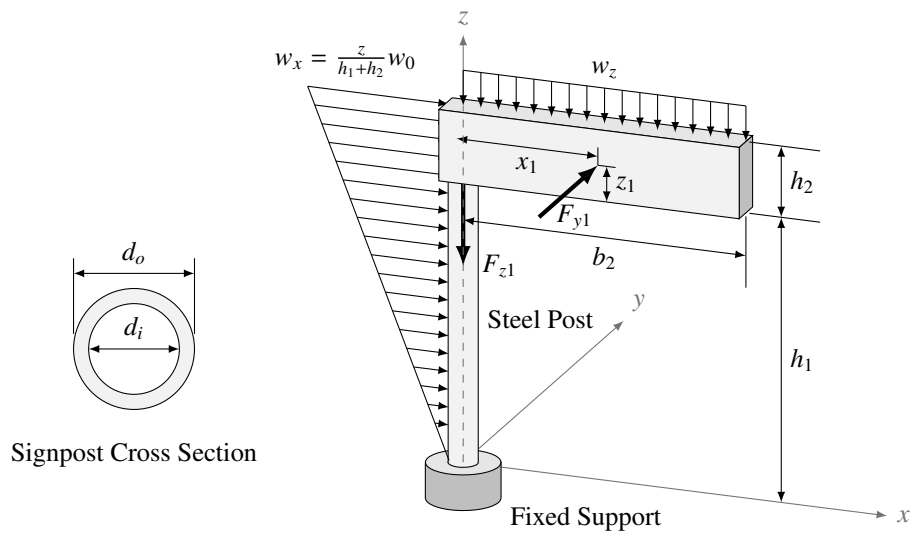


Figura 1.5: Cargas aplicadas sobre un poste.
(Fuente: www.texample.net)

Capítulo 2

Formatos UTFSM para Memorias y Tesis de Grado

Los formatos exigidos (y ocupados en este documento) por el Departamento de Electrónica e Informática y la UTFSM incluyen:

Tipografía. Fuente *Times New Roman* o similar de 11 o 12 puntos (pts.), con interlineado de 1 espacio (máximo 1,5 espacios).

Márgenes. Margen izquierdo (o interno) de 3,5cm (mínimo). Margen derecho (o externo) de 2cm (mínimo). Note que esto cambia para páginas pares e impares para facilitar el empaste de documentos impresos por ambos lados de cada hoja.

Citas bibliográficas. Las citas bibliográficas se harán siguiendo normas de la UTFSM (éstas están basadas en las normas *APA* (usada en este documento), *AMS*, o *IEEE*). Ejemplo:

“ \LaTeX es un sistema de diagramación de documentos.” (Lamport, 1994).

Este documento ocupa estas normas. Revisar la bibliografía que se adjunta para ver un ejemplo.

Numeración de Títulos. El texto del informe final debe ser subdividido en: capítulos y sub-capítulos. La numeración de capítulos estará basada en esquema con división de puntos para los sub-capítulos, es decir: Capítulo 1, Sub-capítulo 1.1, etc.

Numeración de Páginas. Todas las páginas (con excepción de la portada) deben estar numeradas. El preámbulo (Índices, Resumen, Abstract, etc.) debe llevar numeración distinta del desarrollo (capítulos) del documento.

Numeración de Formulas, Tablas y Figuras. Las fórmulas, figuras y tablas correspondientes a un mismo capítulo, se identificarán mediante dos números. El primero corresponde al capítulo pertinente y el segundo al número de orden correlativo.

Los números con que se identifican las fórmulas se colocarán al extremo derecho de las mismas y entre paréntesis. Ejemplo (Ecuación 2.1):

$$f(x) = x^2 - 2x + 1 \quad (2.1)$$

Las ilustraciones (gráficos, láminas, fotografías, etc.) en lo posible deben quedar ubicadas dentro de la página que se les referencia. Los números correspondientes a figuras se colocarán en la parte inferior de las mismas, seguidos de título o breve explicación de la figura. Ver Figura 2.1.

Los números asignados a las tablas se colocarán en la parte superior de ellas, seguidos de los títulos correspondientes. Ver Tabla 2.1



Figura 2.1: Logotipo del Departamento de Electrónica e Informática, UTFSM.
(Fuente: Departamento de Electrónica e Informática, 2016.)

Tabla 2.1: Ejemplo de Numeración de Tablas.

Columna 1	Columna 2	Columna 3
...
...
...

2.1. Otros Formatos UTFSM

2.1.1. Formato de las Cubiertas (Empaste)

A partir del año 2016, ya no es necesaria la entrega de una copia física de la memoria o tesis, siendo esto opcional. Si decide imprimirla, estás son las normas para el empaste.

La cubierta o tapa será de empaste duro, cubierta de vinilo o similar de color NEGRO con letras doradas, según se muestran en Figura 2.2 y Figura 2.3.

2.1.2. Formato del Disco Compacto

El CD/DVD debe tener una carátula de identificación circular con fondo blanco, conteniendo las siguientes leyendas:

- Centrado en la parte superior: UTFSM, con letras mayúsculas en negrita tamaño 12. A renglón seguido el nombre de la Unidad Académica con letras mayúsculas en negrita tamaño 10.
- Centrado en la parte inferior el nombre completo del alumno con letras mayúsculas en negrita tamaño 10.
- Tres espacios más abajo y centrado, “TÍTULO DE LA MEMORIA”, con letras mayúsculas en negrita tamaño 10.
- Dos espacios más abajo y centrado MES –AÑO, con letras mayúsculas en negrita tamaño 10. En el lado izquierdo y centrado, el escudo en colores de la Institución.
- En el lado derecho y centrado, NOMBRE DE LA UNIDAD ACADÉMICA y la ubicación CIUDAD – PAIS, con letras mayúsculas en negrita tamaño 8.

Los CD se guardarán, en la biblioteca, en una caja de acrílico que tendrá una carátula de identificación dividida en tres franjas iguales, con las siguientes leyendas:

- El escudo a color de la Institución de 20 mm de alto, centrado en la franja superior.
- El nombre completo del alumno, y centrado dos espacios más abajo el título de la memoria, en la franja del medio
- El nombre de la Unidad Académica, y renglón más abajo, año. En la franja inferior.

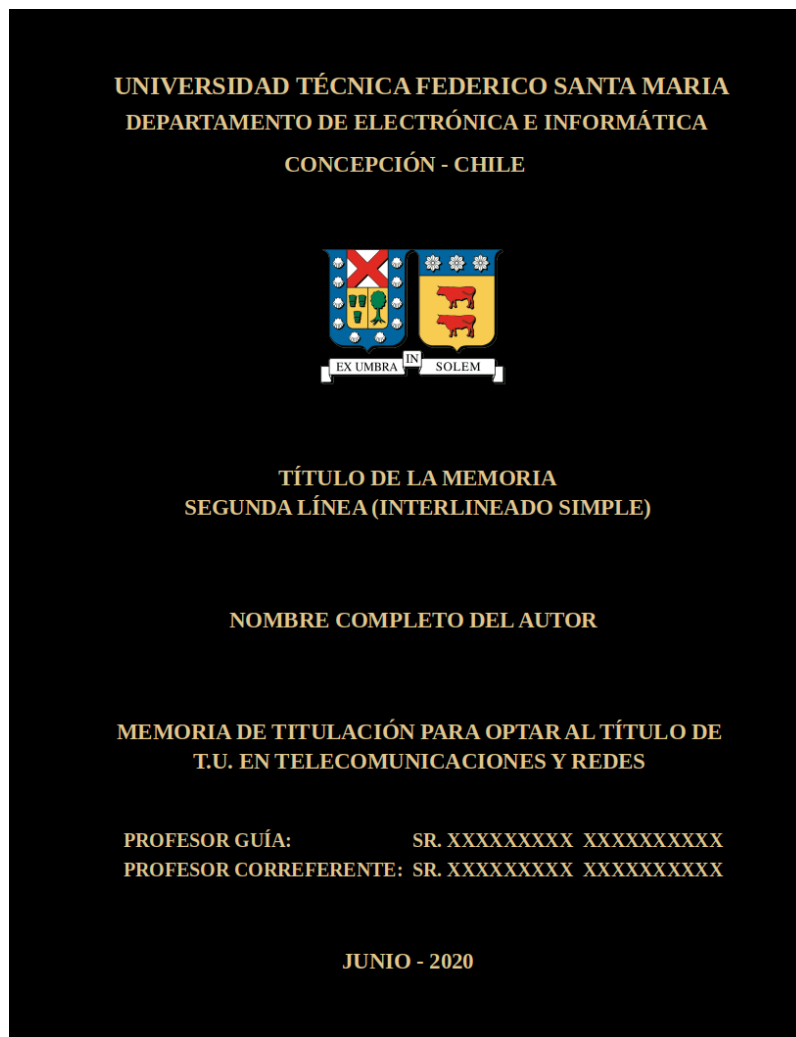


Figura 2.2: Cubierta (Empaste) Memorias y Tesis UTFSM.



Figura 2.3: Lomo del Empaste para Memorias y Tesis UTFSM.

La carpeta `figures` incluye los diagramas (formato LibreOffice) para modificación e impresión.

2.2. Documentos que se incluyen

Se incluyen (en la carpeta `figures`) logotipos oficiales¹ de la UTFSM y del Departamento de Electrónica e Informática.

¹Éstas son imágenes registradas y propiedad intelectual de la UTFSM y del Departamento de Electrónica e Informática, y no están incluidas en la licencia de esta plantilla. La imagen corporativa de la UTFSM y del Departamento de Electrónica e Informática están protegidas por leyes chilenas e internacionales de Derechos de autor. Su uso sólo está autorizado a estudiantes y memoristas de la UTFSM para fines de preparación de documentos académicos, incluidas memorias y tesis.

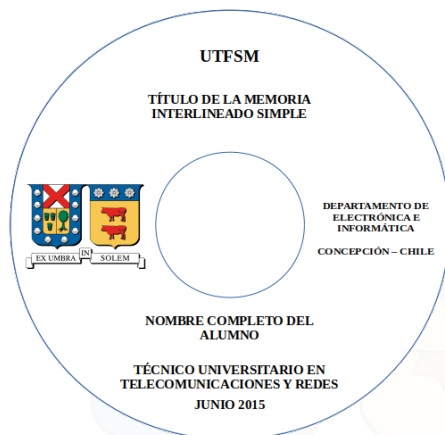


Figura 2.4: Disco Compacto para Memoria UTFSM



Figura 2.5: Cubierta de Disco Compacto para Memorias y Tesis UTFSM.

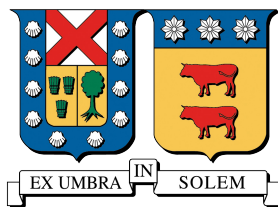


Figura 2.6: Logotipo de la UTFSM



Figura 2.7: Logotipo de la UTFSM (con leyenda)



UNIVERSIDAD TECNICA
FEDERICO SANTA MARIA

DEPARTAMENTO
DE ELECTRÓNICA
E INFORMÁTICA

Figura 2.8: Logotipo de la UTFSM - Departamento de Electrónica e Informática



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LIDER EN
INGENIERIA, CIENCIA
Y TECNOLOGIA

Figura 2.9: Logotipo del Departamento de UTFSM (Formato lateral).



Figura 2.10: Logotipo del Departamento de Electrónica e Informática, UTFSM



Capítulo 3

L^AT_EX

3.1. Obtener L^AT_EX

L^AT_EX es un sistema de preparación de documentos de alta calidad visual (LaTeX Project, 2015). Si no ha ocupado L^AT_EX anteriormente, visite esta página:

- <http://www.latex-project.org/>

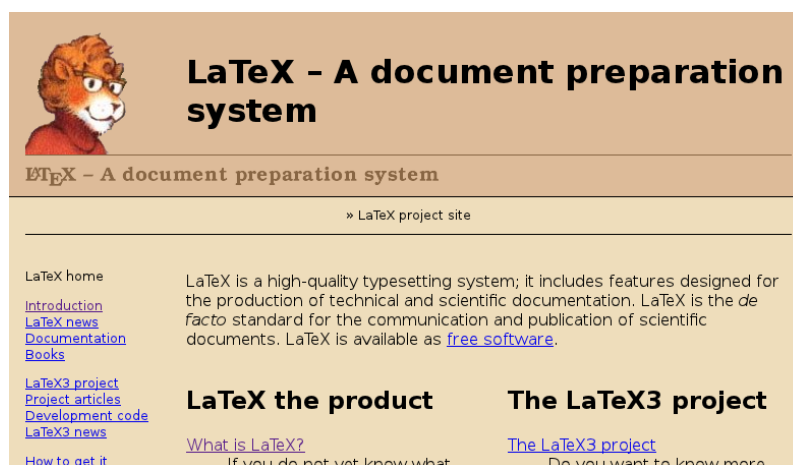


Figura 3.1: LaTeX Project

Puede obtener, en forma gratuita, las distribuciones de L^AT_EX, según su plataforma, en:

Windows <http://miktex.org/>; también puede ocupar <http://www.tug.org/protext/>.

MikTeX ofrece una versión básica. Después de instalarlo, asegúrese de descargar los paquetes adicionales requeridos para compilar esta plantilla.

MacOS <http://www.tug.org/mactex/>.

La versión de MacTeX es completa e incluye por defecto todos los paquetes necesarios para compilar esta plantilla.

Unix/Linux <http://www.tug.org/texlive/>.

La instalación de TeXLive en plataformas *nix es muy sencilla y directa a través de una consola (con permisos de administración):

```
(K/X)Ubuntu / Debian: # apt-get install texlive
```

```
Fedora: # dnf install texlive
```

```
RedHat / CentOS: # yum install texlive
```

Para una referencia completa sobre \LaTeX , recomendamos el libro de [Lamport, 1994](#); aunque para solucionar problemas específicos, su mejor aliado es Internet. Otros libros que puede consultar se presentan en la Bibliografía ([Mittelbach et al., 2004](#); [Oetiker et al., 2006](#); [Roberts, 2005](#); [Borbón A. y Mora F., 2014](#)).

3.2. Editores para \LaTeX

Existen muchos editores de \LaTeX , la mayoría de ellos de distribución gratuita y con versiones para los distintos sistemas operativos:

TexStudio Mac, Windows y Linux. www.texstudio.org.

TexMaker Mac, Windows y Linux. www.xmlmath.net/texmaker/.

TeXworks Mac, Window y Linux. <https://www.tug.org/texworks/>

TexShop Mac. <http://pages.uoregon.edu/koch/texshop/>.

Kile Linux y Mac (vía macports). <http://kile.sourceforge.net/>.

LaTeXila Linux y Mac (vía Homebrew). <https://wiki.gnome.org/Apps/LaTeXila#Installation>.

Bibliografía

- Borbón A., Alexander y Mora F., Walter (2014). *Edición de textos científicos L^AT_EX*. Costa Rica: Instituto Tecnológico de Costa Rica, 1ra. edición. 3.1
- Jaime C. Rubin-de-Celis (2020). Plantilla latex para memorias utfsm. <https://github.com/jaimercz/utfsm-thesis>. [Acceso Mayo de 2020].
- Lamport, Leslie (1994). *L^AT_EX A Document Preparation System - User's Guide and Reference Manual*. Addison-Wesley Professional, 2 edición. 1.8, 2, 3.1
- LaTeX Project (2015). What is L^AT_EX? <http://www.latex-project.org/intro.html>. [Acceso Octubre de 2015]. 1.8, 3.1
- LyX Project (2015). LyX - the document processor. <http://www.lyx.org/>. [Acceso Septiembre de 2015]. 1.8
- MacTeX (2015). Mactex - T_EX user group. <http://www.tug.org/mactex/>. [Acceso Septiembre 2015]. 1.8
- MikTeX (2015). Miktex project page. <http://www.miktex.org>. [Acceso Septiembre 2015]. 1.8
- Mittelbach, Frank; Goossens, Michel; Braams, Johannes; Carlisle, David; y Rowley, Chris (2004). *The L^AT_EX Companion*. Addison-Wesley Series on Tools and Techniques for Computer Typesetting. Boston, MA, USA: Addison-Wesley, 2da. edición. 1.8, 3.1
- Oetiker, Tobias; Partl, Hubert; Hyna, Irene; y Schlegl, Elisabeth (2006). *The Not So Short Introduction to L^AT_EX 2_ε*, 4ta. edición. 1.8, 3.1
- Roberts, Andrew (2005). Getting to grips with L^AT_EX. [Online]. <http://www.andy-roberts.net/misc/latex/index.html>. 1.8, 3.1
- Try GitHub (2017). <https://try.github.io/>. [Acceso Junio de 2017]. (document)
- Wiki LyX (2017). Homepage of the LyX Wiki! <http://wiki.lyx.org>. [Acceso Junio 2017]. 1.8



Anexo A

LICENCIA

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