TYPESETTING REPORTS USING LATEX

v2.0 (JULY 2016) *

DEPARTMENT OF INFORMATION SCIENCE AND TECHNOLOGY

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Contents

This document provides a few guidelines to typeset the reports using LaTex according to Anna University thesis format.

1 Changes from the previous version

1. Changed the model of Table of Contents - Reduced the top margin and line spacing. Removed the title Chapter no, title and page numbers.
2. Counter depth for sections is increased to 4.
3. Reduced the top margin for Chapter Titles.
4. Changed the references structure using natbib and unsrt bibliography style.
5. Appendices are named using A, B instead of Arabic numerals.

2 Prerequisites

The user is expected to be familiar with the LaTex typesetting system with the basic understanding of `cls`, `tex` and bibliography files.

3 Download and Installation

The required files are available in `https://sites.google.com/a/auist.net/ist-report/`. Make sure you have LaTex installed in your machine.

- Download `auistreport.zip` and extract it.
- To check whether the LaTex template works in your machine, go to the folder, where you have extracted the files and execute the command "`pdflatex authesis.tex`". If everything goes well, you should be able to generate a pdf called `authesis.pdf`, which would be residing in the same folder. (You might have already noticed a similar file called authesis.pdf in the folder before executing the command. The same file is rewritten once more on executing the command). If you notice errors appearing in the terminal, you might have to install the necessary packages.

4 Structure of 'ausitreport'

After extracting, the folder '`auistreport`' contains folders named `1,2,3,4,5,6, Abstract, Acknowledgement, Acronyms, Appendix, Conclusion and lpub`. Along with these, there are some files with extension '`*.sty`', a few image files: `auemblem.eps`, `auemblem.pdf`,

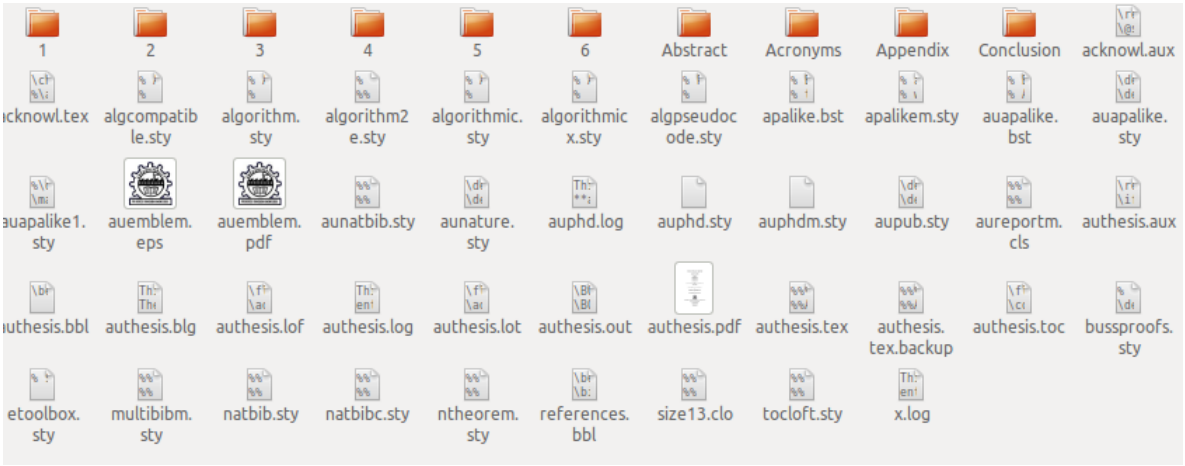

Figure 1: Structure of auistreport

other files: `size13.clo`, `authesis.cls` and `authesis.tex` (Refer Figure 1). Do not modify `*.sty`, `*.clo`, `*.cls` and image files .

The main source file is '`authesis.tex`', which has the details of the packages, definitions, contents of first and second page of thesis and link to all other chapters. There may be unwanted packages that are listed in this file. Comment the ones that are not needed.

5 Frontmatter

The first two pages namely Title Page and Certificate can be edited in the main file. All other topics such as Abstract, Acknowledgement and Acronyms are to be edited in a separate file which are placed in the respective folders.

5.1 Title Page

The information for title page and second page of thesis can be found in the file '`authesis.tex`'. Details of title page such as *'Title of the thesis'*, *'Author'*, *Course information* and *'Month and year'* are to be filled in the relevant places (Figure 2).

5.2 Second Page

The second page contains the Certificate. You have to fill in the details of your name and the name of your guide. Replace

```
``$<$NAME OF GUIDE$>$, $<$DESIGNATION$>$"
```

appropriately.

```
  \LARGE
  \textbf{\uppercase{Title of Project Report}} \\
  \vspace{0.6\baselineskip}
  \bigsize{\textbf{A PROJECT REPORT}}\\
 \vspace{0.4\baselineskip}

  \normalsize{\textit{\textbf{Submitted by}}}\\
  \vspace{0.5\baselineskip}
  {
  \Large \textbf{CANDIDATE 1}}\\
  \Large{\textbf{CANDIDATE 2}}\\
  \Large{\textbf{CANDIDATE 3}} \\ \vspace{0.2\baselineskip}
  \normalsize{\textit{to the}} \\
  \normalsize{\textbf{FACULTY OF INFORMATION AND COMMUNICATION ENGINEERING}} \\
  \vspace{1\baselineskip}
  \normalsize{\textit{\textbf{for partial fulfillment for the award of the degree}}}\\
  \normalsize{\textit{\textbf{of}}}\\
\vspace{.2\baselineskip}
  \bigsize{{\textbf{BACHELOR OF TECHNOLOGY}}}\\
  \normalsize{\textit{\textbf{in}}}\\
  \bigsize{{\textbf{INFORMATION TECHNOLOGY}}}\\
\end{center}
  \begin{center}
   %\includegraphics[width=26mm,height=25mm]{auemblem.pdf}   \\
   \includegraphics[scale=0.7]{auemblem.pdf} \\
  \normalsize{ \textbf{DEPARTMENT OF INFORMATION SCIENCE AND TECHNOLOGY }}\\
  \normalsize{\textbf{COLLEGE OF ENGINEERING}}\\
  \normalsize{\textbf{ANNA UNIVERSITY}}\\
  \normalsize{\textbf{CHENNAI  600 025}}\\
  \vspace{0.4\baselineskip}
  \normalsize{\textbf{MONTH YEAR }}
 \end{center}
\pagebreak

```

Figure 2: Title Page

```
\begin{flushleft}
 \parbox[t]{\datewidth}{\small{\textbf{PLACE: }}\\
 \small{\textbf{DATE: }}}
 \hfill
 \parbox[t]{6 cm}{\small{\textbf{$<$NAME OF GUIDE$>$}} \\
 \small{\textbf{$<$DESIGNATION$>$}}\\
 \small{\textbf{PROJECT GUIDE}}\\
 \small{\textbf{DEPARTMENT OF IST, CEG}}\\
 \small{\textbf{ANNA UNIVERSITY}}   \\
 \small{\textbf{CHENNAI  600025}}
 }
\end{flushleft}
```

5.3 Abstract, Acknowledgement and Acronyms

The third and fourth page contains the abstract and acknowledgement, respectively. The main file '`authesis.tex`' has the link to these files (Refer Figure 3).

Locate the file `abstract.tex` in the folder `Abstract` and open the file. The first two lines appear as:

```
%%%%%%%%%%%----------Abstract----------%%%%%%%%%%%%%%%%%%%%%%%%%
\include{Abstract/abstract}
%%%%%%%%%%%----------Acknowledgement----------%%%%%%%%%%%%%%%%%%%
\include{Acknowledgement/acknowledgement}
```

Figure 3: Link to Abstract and Acknowledgement pages in `authesis.tex`

```
 \chapter*{\uppercase{ABSTRACT}}
\addcontentsline{toc}{section}{\bfseries \uppercase{Abstract}}
```

The first line has a * mark after chapter, to indicate the omission of chapter number. The second line is needed to include this entry in the Table of Contents. Do not change these two lines. Enter the abstract text after:

```
 \begin{sloppypar}
```

Similarly, locate the folder `Acknowledgement` and open the file `acknowledgement.tex`. Enter the contents and in the last line, fill your name and initial.

```
 \hfill \textbf{$<$NAME INITIAL$>$}
```

Link for Acronyms is ordered after Table of Contents in the main file `authesis.tex`. To enter Acronyms, locate the folder `Acronyms` and open the file `Acronyms.tex`. Enter the relevant Abbrevations/symbols and explanation after the following lines in `Acronyms.tex`.

```
 \chapter*{LIST OF SYMBOLS AND ABBREVIATIONS}
\addcontentsline{toc}{section}{\bfseries LIST OF SYMBOLS AND ABBREVIATIONS}

\setlongtables
\begin{longtable}
  {>{\PBS\raggedright\hspace{0pt}}p{3cm}@{}%
    >{\PBS\raggedright\hspace{0pt}}p{11.5cm}@{}}
```

Refer to the sample file in the template for including symbols and the respective explanation using $ and & signs.

5.4 Table of Contents

This LaTex template automatically generates Table of Contents, List of Tables and List of Figures, using the package `tocloft`. The relevant script is given below. Unless specified, do not modify the settings.

```
 \begin{onehalfspacing}
\tableofcontents

\pagebreak

\addcontentsline{toc}{section}{\bfseries LIST OF TABLES}
\listoftables

 \clearpage \addcontentsline{toc}{section}{\bfseries
LIST OF FIGURES} \listoffigures
%\clearpage
\end{onehalfspacing}
```

---

6 Bibliography

This LaTex template includes natbib type of model with the style *unsrt*. This means you have to first create a *.bib file with all the references separately and then cite those in your texts. The references appear in the order they are cited. An example bib file namely, publication.bib is available in your folder. This file is linked to authesis.tex as indicated below.

```
\bibliographystyle{unsrt}
\nocite{*}
\cleardoublepage
\phantomsection
\addcontentsline{toc}{chapter}{REFERENCES}
\begin{spacing}{1}
\bibliography{publication}
\end{spacing}
```

6.1 Creating .bib file for references

To create a new file of references for your work, open any text editor and save it with an extension of `bib` in your working directory. In the main file `authesis.tex`, replace `publication` with the file you created. Follow the format strictly according to bibtex. For example, a book should be added as:

```
  @BOOK{Aghion,
title = {Handbook of Economic Growth},
editor = {Aghion, Philippe and Durlauf, Steven},
year = {2005},
volume = {1},
edition = {1},
publisher = {Elsevier}
}
```

Note that the name of the reference is given after "@BOOK" as Aghion. This name should be used for citing inside the texts as:

```
 \cite{Aghion}
```

For more examples on creating a bibtex file, refer:
`https://verbosus.com/bibtex-style-examples.html`. After linking the .bib file to authesis.tex, you have to compile the bib file first. This can be done using the command `bibtex authesis`. After running this command, use `pdflatex authesis.tex` again for generating the references.

6.2 List of Publications

Your list of publications can be edited in the file `lpub.tex` residing in the folder `lpub`. The link for this file is available in `authesis.tex` as:

```
 %%%%%%%%%%%%----------List of publications---
\begin{spacing}{1}
  \normalsize
    \include{lpub/lpub}
\end{spacing}
```

7 Texts in Chapters

As explained earlier in Section 4, this template partitions different chapters into folders named `1,2,3,etc`. Within each folder, the respective chapter can be added and saved with an extension of `*.tex`. These files are linked in the main file `authesis.tex` as :

```
%%%%%%%%%%%------Chapters--------
\pagenumbering{arabic}
\ausection
\include{1/Chapter1}
\include{2/Chapter2}
\include{3/Chapter3}
\include{5/Chapter5}
\include{6/Chapter6}
\include{Conclusion/conclusion}
\cleardoublepage
\phantomsection
\include{Appendix/appendix}
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

To add texts, open the respective folder and edit the `*.tex` file. To add more chapters, create new folders, add a file with the extension of `*.tex` and provide a link in `authesis.tex`. Chapters that are added automatically gets reflected in the Table of Contents.

Note that the chapter name and section name have to be given in uppercase, as per the regulations. So, include the title within the command `\uppercase { }` . The title for chapter, section, subsection, subsubsections, etc., can be given as follows:

```
\chapter{\uppercase{EXPERIMENTAL TECHNIQUES AND THEORY}}
\section{\uppercase{Scope and objective}}
\subsection{Ultrasonic Interferometer  Measurement}
\subsubsection{Description}
\paragraph{Measuring}
\subparagraph{Experimental Procedure}
```

To avoid breaking of words between two lines, enclose the text within the command `\begin{sloppypar}..\end{sloppypar}`.

8 Figures, Tables and Equations

This LaTex template automates the numbering within the chapters for Figures, Tables and Equations. The numbers and titles for Figures and Tables are updated automatically in `List of Figures` and `List of Tables`, respectively.

8.1 Figures

Figures can be added using `\includegraphics{}`. An example is shown below:

```
1. \begin{figure}
2. \begin{center}
3.    \includegraphics[scale=0.35]{2/inter1.png}
4.     \caption{Experimental arrangement of ultrasonic velocity}
5.     \label{fig:inter1}
6. \end{center}
7. \end{figure}
```

The first and seventh lines mark the environment for figures. Lines 2 and 6 specify the center alignment of figure. Line 3 indicates the image file that is to be placed in the document. The actual name of the file here is `inter1.png` and is stored in folder `2`. This information is given in the third line along with the scaling factor within square brackets as 0.35. Line 4 specifies the caption of the figure and line 5 provides the label that could be linked to the document. The following line shows the relevant text with a link given by `\ref{fig:inter1}` to the above figure.

```
An ultrasonic interferometer (Figure \ref{fig:inter1} supplied
by M/s. Mittal Enterprises,
```

8.2 Tables

The tables can be added within the environment `tabular`. An example is given below.

```
\begin{table}[h]
\begin{center}
\caption{Ultrasonic velocity (U) in liquids at 303.15K}
```

```
  \begin{tabular}{|c|c|c|c|c|}
  \hline
   \textbf{Sl. No} & \textbf{Liquid} & \multicolumn{3}{c|}{\textbf{Ultrasonic Velocit
   \hline
   ~&~ & \textbf{Value} & \textbf{Value} & \textbf{Reference} \\
   \hline
   1 & Cyclohexane & 1230.33 & 1230.30 & Vasantharani et al (2009) \\
   \hline
   2 & 1-Propanol & 1193.40 & 1194.00 & Thirumaran  \\
   \cline{1-4}
     3 & 1-Butanol & 1230.15 & 1237.10 & \& Thenmozhi (2010) \\
   \hline
    4 & 1- Pentanol & 1252.90 & 1258.20 & Palani et al (2009) \\
    \hline
    5 & 1-Hexanol & 1288.49 & 1289.10 & Kannappan et al (2009) \\
    \hline
  \end{tabular}
   \label{ta:table1}
\end{center}
 \end{table}
```

Note here, that the caption is provided before `\begin{tabular}` as per the regulations. Similar to the figure, tables can also be referenced in the text with the name assigned in the label. The The output of the above table is shown in Figure 4.

Table 2.1: Ultrasonic velocity (U) in liquids at 303.15K

Sl. No	Liquid	Ultrasonic Velocity $ms^{-}1$		
		Value	Value	Reference
1	Cyclohexane	1230.33	1230.30	Vasantharani et al (2009)
2	1-Propanol	1193.40	1194.00	Thirumaran
3	1-Butanol	1230.15	1237.10	& Thenmozhi (2010)
4	1- Pentanol	1252.90	1258.20	Palani et al (2009)
5	1-Hexanol	1288.49	1289.10	Kannappan et al (2009)

Figure 4: Sample output of table

8.3 Equations

To include equations, enclose it within the commands `equation` or `eqnarray` as shown below. The `label` command indictes the name of the equation, that can be used to refer in the text.

```
\begin{equation}
\label{eq:square}
 d = \frac{n\lambda}{2}
 \end{equation}
```

---

9 Frequently Asked Questions

1. What are some good resources to learn LaTex?
   There are plenty of resources available in the web. One of the place to start with LaTex is the video tutorial from `www.spokentutorial.org`.

2. How to force the content to move to the next page?
   Use the command `\newpage` to force the content to move to the next page.

3. How to add a longer table in Landscape mode spanning two pages?
   Enclose the table within the environment `landscape` and `longtable`. These packages are already marked in this template.

4. How to force the table or figure to appear near the text?
   Use `\begin {table}[h]` instead of `\begin {table}`.

5. How to add algorithms?
   Algorithms can be written using `algorithm` and `algorithmic` packages. These style files are available within the template.