



TYPESETTING REPORTS USING LATEX
v1.0 *

**DEPARTMENT OF INFORMATION
SCIENCE AND TECHNOLOGY**

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

1 Prerequisites

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

2 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.

3 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`, 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.

4 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.

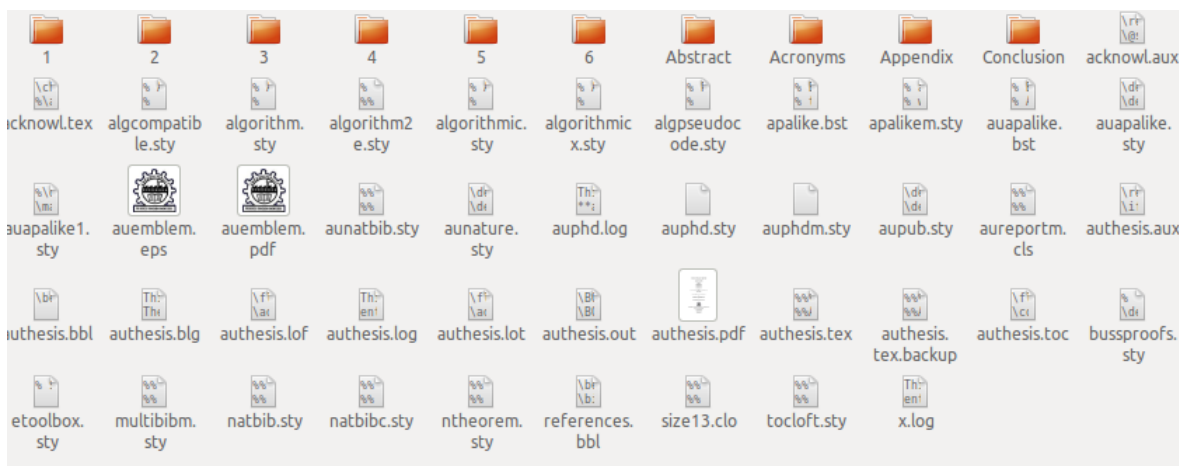


Figure 1: Structure of auistreport

4.1 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).

4.2 Second Page

The second page contains the Certificate. You have to fill in the details of your name and the name of your guide. Refer Figure 3.

4.3 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 4).

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

```
\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:

$$\backslash\mathrm{begin}\{\mathrm{sloppypar}\}$$



```

151 \LARGE
152 \textbf{\uppercase{Title of Project Report}} \\
153 \vspace{0.6\baselineskip}
154 \bigsize{\textbf{A PROJECT REPORT}}\\
155 \vspace{0.4\baselineskip}
156
157 \normalsize{\textit{\textbf{Submitted by}}}\ \\
158 \vspace{0.5\baselineskip}
159 {
160 \Large \textbf{CANDIDATE 1}}\\
161 \Large{\textbf{CANDIDATE 2}}\\
162 \Large{\textbf{CANDIDATE 3}} \\ \vspace{0.2\baselineskip}
163 \normalsize{\textit{to the}} \\
164 \normalsize{\textbf{FACULTY OF INFORMATION AND COMMUNICATION ENGINEERING}} \\
165 \vspace{1\baselineskip}
166 \normalsize{\textit{\textbf{for partial fulfillment for the award of the degree}}}\ \\
167 \normalsize{\textit{\textbf{of}}}\ \\
168 \vspace{.2\baselineskip}
169 \bigsize{\textbf{BACHELOR OF TECHNOLOGY}}}\ \\
170 \normalsize{\textit{\textbf{in}}}\ \\
171 \bigsize{\textbf{INFORMATION TECHNOLOGY}}}\ \\
172 \end{center}
173 \begin{center}
174 %\includegraphics[width=26mm,height=25mm]{auemblem.pdf} \\
175 \includegraphics[scale=0.7]{auemblem.pdf} \\
176 \normalsize{\textbf{DEPARTMENT OF INFORMATION SCIENCE AND TECHNOLOGY }}\\
177 \normalsize{\textbf{COLLEGE OF ENGINEERING}}\\
178 \normalsize{\textbf{ANNA UNIVERSITY}}\\
179 \normalsize{\textbf{CHENNAI 600 025}}\\
180 \vspace{0.4\baselineskip}
181 \normalsize{\textbf{MONTH YEAR }}
182 \end{center}
183 \pagebreak
184

```

Figure 2: Title Page

```

195 \begin{spacing}{1.5}
196 \begin{sloppypar}
197 \fontsize{14}{17}\selectfont Certified that this project report titled ``TITLE OF THE PROJECT'' is the bona fide work of ``NAME OF THE
198 CANDIDATE(S)'' who carried out project work under my supervision. Certified further that to the best of my knowledge and belief, the work reported
199 herein does not form part of any other thesis or dissertation on the basis of which a degree or an award was conferred on an earlier occasion on
200 this or any other candidate.
201 \end{sloppypar}
202 \end{spacing}
203
204 \begin{flushleft}
205 \parbox[t]{\datewidth}{\small{\textbf{PLACE: }}}\\
206 \small{\textbf{DATE: }}
207 \hfill
208 \parbox[t]{9 cm}{\scriptsize{\textbf{NAME OF THE GUIDE}} \\
209 \scriptsize{\textbf{PROJECT GUIDE}}\\
210 \scriptsize{\textbf{DEPARTMENT OF INFORMATION SCIENCE AND TECHNOLOGY}}\\
211 \scriptsize{\textbf{COLLEGE OF ENGINEERING}}\\
212 \scriptsize{\textbf{ANNA UNIVERSITY}} \\
213 \scriptsize{\textbf{CHENNAI - 600 025}}}
214 \end{flushleft}
215 \vspace{0.5 cm}
216 \begin{center}
217 \small{\textbf{COUNTERSIGNED}}\\
218 \vspace{1 cm}
219 \textbf{\scriptsize{DR. SASWATI MUKHERJEE}}\\
220 \scriptsize{\textbf{HEAD OF THE DEPARTMENT}}\\
221 \scriptsize{\textbf{DEPARTMENT OF INFORMATION SCIENCE AND TECHNOLOGY}}\\
222 \scriptsize{\textbf{COLLEGE OF ENGINEERING}}\\
223 \scriptsize{\textbf{ANNA UNIVERSITY}} \\
224 \scriptsize{\textbf{CHENNAI - 600 025}}
225 \end{center}

```

Figure 3: Second Page

```

221 ~~~~~~Abstract~~~~~
222 \include{Abstract/abstract}
223 ~~~~~~Acknowledgement~~~~~
224 \include{Acknowledgement/acknowledgement}
225

```

Figure 4: Link to Abstract and Acknowledgement pages in authesis.tex



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 Abbreviations/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.

4.4 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}
```

5 Bibliography

This LaTeX template includes a modified `apalike` style of bibliography as per the thesis requirements of Anna University. Accordingly, the packages `aunatbib`, `apalike` and `auapalike` can be found in the folder.

In the file `authesis.tex`, the following lines indicate the bibliography information.

```
%%%%%%%%%%%%-----Bibliography-----
\bibliographystyle{auapalike}
\nocite{*}
\cleardoublepage
\phantomsection
\addcontentsline{toc}{chapter}{REFERENCES}
\begin{spacing}{1}
  \normalsize
  \input{references.bbl}% Sample set of references
\end{spacing}
```

The actual bibliography file can be located in the file `references.bbl` in your working directory. The link to this file can be found in the above lines as `input{references.bbl}`. After writing thesis completely, comment the second line `nocite...`. This is to ensure the appearance of cited references alone in **References**.

5.1 Adding References

To create a new file of references for your work, open any text editor and save it with an extension of `bbl` in your working directory. In the main file `authesis.tex`, replace `references.bbl` with the file you created.

Include the bibliographic information in your new file, within the commands:

```
\begin{thebibliography}{99}

\end{thebibliography}
```



The format for including references can be found in the sample file `references.bbl`. Each reference starts with `\bibitem`, followed by authors information inside square brackets, `[]` and the cited name within curly brackets, `{ }`. Whatever is added inside the square brackets will appear in the text where this reference is cited. The cited name within curly brackets should be the same name used for citing this reference. Other details start with `\newblock`. An example is shown below:

```
\bibitem[Temperly \& Trevena 1978]{temperly}
Temperly and Trevena,~DH 1978,
\newblock Liquids and their properties,
\newblock John Wiley and Sons,
\newblock New York.
```

The output of this particular reference is:

Temperly and Trevena, DH 1978, Liquids and their properties, John Wiley and Sons, New York.

To add the website information in the references, use the command `\url`. Refer to the Ph.d regulations of Anna University for the correct ordering of information in References.

5.2 Citing References

Within the chapters or Appendix, the references added in bibliography should be cited. It can be done using `cite` command. The above reference for citation is:

```
\cite{temperly} produced definite evidence that liquids can withstand
tensions of at least tens of atmospheres.
```

Note that, in this example the citation name `temperly` links the bibliographic information to the citation text. The output of this command in pdf is shown below.

(Temperly & Trevena 1978) produced definite evidence that liquids can withstand tensions of at least tens of atmospheres.



5.3 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}

```

6 Texts in Chapters

As explained earlier in Section 3, 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}`.

7 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.

7.1 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,

7.2 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 Velocity (m/s)}}
\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 5.

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 & Thenmozhi (2010)
3	1-Butanol	1230.15	1237.10	
4	1- Pentanol	1252.90	1258.20	Palani et al (2009)
5	1-Hexanol	1288.49	1289.10	Kannappan et al (2009)

Figure 5: Sample output of table



7.3 Equations

To include equations, enclose it within the commands `equation` or `eqnarray` as shown below. The `label` command indicates 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}
```

8 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.