# UNIVERSITY OF DELAWARE
# INFORMATION TECHNOLOGIES
# USER SERVICES

## The LaTeX2e UDThesis Format

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**Abstract**

The LaTeX UDThesis format is a document type designed to format theses and dissertations according to the regulations specified by the University of Delaware Office of Graduate Studies. It provides the correct margin width (with a bit to spare so that photocopying at 98% doesn't cause the margins to be incorrect), as well as the proper heading and page number placement. LaTeX UDThesis also includes commands for automatic formatting of the title and approval page of your document and the facility to cite bibliographic references from your own list or from a separate database.

**Note:** It is the student's responsibility to make sure that the formatted document meets the requirements specified by the Office of Graduate Studies' Thesis and Dissertation Manual 1995–1996, available in the Manuals section at the University of Delaware Bookstore.

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### Additional Documentation

- LaTeX: *A Document Preparation System* by Leslie Lamport (Updated for LaTeX2e)—May be purchased at the University Bookstore upstairs in the "Computer" section.

### Support

Consultants are generally unfamiliar with this package and can only help you interpret the documentation. Specialized consulting is available. If necessary, you will be referred to a specialist through the Consulting Room. Problems with the software should be reported to the Consulting Room.

### Conventions Used in This Document

Before you try to follow any of the directions in this document, you will need to familiarize yourself with the conventions used in it.

The examples (set off by bars) show you how to type specific commands. If the example uses braces {}, you are to type the braces. Optional parts of commands are set off by brackets [ ]. If you use an option in a command, you must type the brackets too. Italicized words indicate material that you must supply (a filename, for example). Comments that explain commands are set off by % signs. Anything that follows a % on the same line will not print.

# TYPICAL MANUSCRIPT FILE ORGANIZATION

To produce a large document, use three types of files:

- main manuscript file
- style file
- front material, chapter, and appendix files

It is generally most convenient to put each chapter or appendix into a separate file. These files must each have an extension of **.tex**. To include the text of the files in the correct place in the completed document, type `\include` or `\input` (see **Running One Chapter at a Time** for an explanation of the differences) followed by the filename enclosed in {} in the main manuscript file. When you include the files in the main manuscript file, use only the filename without the **.tex** extension. For example, to include the file for chapter 1 (which you have called **chapter1.tex**), you would type

```
\include{chapter1}
```

The **main mainuscript file** should be organized in this manner:

```
\documentclass {udthesis}
\begin {document}
\include{filename for title and approval page, abstract, etc.}
\include{filename for first chapter}
\include{filename for second chapter}
...
\include{filename for first appendix}
\include{filename for second appendix}
...
\include{filename for references}
\end {document}
```

The first line of your file must be the `documentclass {udthesis}` command. If you do not include a font size after `\documentclass`, or you try to specify 11-point font, your document will be printed in the 12-point font regardless.

A typical input file for a chapter or appendix might look like this:

```
\chapter {Introduction}
\section {Section One}
```

The included file for the title and approval page and other front material might look like this (comments are set off by % signs):

---

```
(Title Page commands)     % see Title and Approval Page section
\maketitlepage            % make title page
\begin{approvalpage}      % begin approval page
(Approval Page commands)  % see Title and Approval Page section
\end{approvalpage}        % end approval page
\begin{signedpage         % begin signature page (Dissertation only)
(Signature Page commands) % see Title and Approval Page section
\end{signedpage}          % end signature page

\begin{front}             % begin front material
\prefacesection{title for acknowledgments}
   (text)
\maketocloflot            % create table of contents,
                          % list of figures, and list of tables
\prefacesectiontoc{title for abstract}
   (text)
\prefacesectiontoc{title for summary}
   (text)
\end{front}               % end front material
```

---

**Note:** If you do not need to generate a list of figures, put `\figurespagefalse` before `\maketocloflot`. If you do not need to generate a list of tables, put `\tablespagefalse` before `\maketocloflot`.

### Running One Chapter at a Time

The best way to run a chapter by itself is to use the `\include` macro rather than `\input`. You can tell LaTeX which file to include by using the `\includeonly` macro. The advantage with this method is the ability to retain the correct chapter and page numbers for the files you choose to format. Here is a typical main manuscript file, using this method.

---

```
\documentclass {udthesis}
\includeonly{tap}
\begin{document}
\include{tap}
\include{chap1}
\include{chap2}
\include{chap3}
\include{chap4}
\include{appA}
\include{appB}
\end{document}
```

---

The above example would format the file **tap.tex**, which is the Title and Approval pages. If you use this method, you must format the files in order at least once to set up the correct chapter and page numbers. Please refer to the User Services' document LaTeX Advanced Topics: "Separating Files" on page 22 or Leslie Lamport's LaTeX book: "Splitting Your Input" on page 75 for additional help.

# AUTOMATIC NUMBERING

LaTeX automatically generates numbers for the sections of your document. Following are the sectioning commands you can use in UDThesis and the results they will produce in your text.

### Sectioning Commands

| | |
|---|---|
| `\chapter` | automatically numbers chapters; you supply chapter title<br>e.g., `\chapter{Introduction}` |
| `\chapter*` | same as `\chapter`, but unnumbered<br>and no Table of Contents entry |
| `\appendix` | same as `\chapter`, but for appendices<br>e.g., `\appendix{Computer Programs}` |
| `\oneappendix` | same as `\appendix`, but used for only one appendix |
| `\prefacesection` | same as `\chapter*`, but used only in the front material<br>and no Table of Contents entry<br>e.g., `\prefacesection{Acknowledgments}` |
| `\prefacesectiontoc` | same as `\prefacesection`, but there is<br>a Table of Contents entry<br>e.g., `\prefacesectiontoc{Abstract}` |
| `\section` | numbered within Chapter or Appendix<br>e.g., `\section{Melt Down}` |
| `\section*` | same as `\section`, but unnumbered |
| `\subsection` | numbered within Section<br>e.g., `\subsection{The First Minute After}` |
| `\subsection*` | same as `\subsection`, but unnumbered |
| `\subsubsection` | numbered within SubSection<br>e.g., `\subsubsection{The First Day After}` |
| `\subsubsection*` | same as `\subsubsection`, but unnumbered |

### Putting an Unnumbered Entry in the Table of Contents

If you use the * form of the sectioning commands, there will be no entry made in the Table of Contents. If you would like an unnumbered entry in the Table of Contents, use

\addcontentsline{toc}{*section type*}{*title*}

where *section type* is the name of one of the sectioning commands without the \ and *title* is the text to be entered into the Table of Contents. It is most convenient to include the \addcontentsline{toc} command immediately after each sectioning command in your thesis. Remember that you only need to do this if you use the * form of the sectioning command. For example,

```
\section*{All Figures Representing X,Y,Z Data}
\addcontentsline{toc}{section}{All Figures Representing X,Y,Z Data}
```

### Breaking a Long Title

If a chapter title is long and you need to break it, use the \protect\linebreak command after the word where you want to break the line. For example

```
\chapter{This is a very long title\protect\linebreak
         that will be centered properly}
```

### Numbered and Unnumbered Equations

1. **Numbered Equations**

   The **equation** and **eqnarray** math environments generate numbers that can be assigned to a key with a \label command. The environments

   \begin{equation} *formula* \end{equation}

   \begin{eqnarray} *formula* \end{eqnarray}

   will put the equation number flush right with the margin, unless the **leqno** document style option is used. Each equation number is produced within a chapter or appendix. See page 15 for an example.

2. **Unnumbered equations**

   There are two types of unnumbered equations:

   (a) **in-text** A formula that appears in the middle of a sentence is called an **in-text** formula. There are three ways to produce an in-text formula:

   $ *formula* $

   \( *formula* \)

   `\begin{math}` *formula* `\end{math}`

   (b) **displayed** A displayed formula appears outside of the running text. Displayed equations are centered and unnumbered. These can be produced in three ways:

   $$ *formula* $$

   \[ *formula* \]

   `\begin{displaymath}` *formula* `\end{displaymath}`

### Footnote Numbers

Footnotes will be numbered automatically by using the `\fnote` command. To create a footnote, use

`\footnote`{*text of footnote*}

---

**What you type:**

```
This is a footnote.\footnote{What is this all about?} Now how
about a second one.\footnote{Isn't this easy?}
```

**Result:**

This is a footnote.[1] Now how about a second one.[2]

---

[1] What is this all about?

[2] Isn't this easy?

### Endnote Numbers

Endnotes will be numbered automatically by using the `\enote` command. To create an endnote, use

`\enote{`*text of endnote*`}`

---

**What you type:**

```
This is an endnote.\enote{You should not mix footnotes and endnotes.}
Now how about a second one.\enote{Use one or the other.}
```

**Result:**

This is an endnote.[1] Now how about a second one.[2]

---

To produce the list of endnotes, use `\endnotes{`*Title*`}` command at the end of each chapter or at the end of your entire document in **main.tex**. For example,

---

**What you type:**

```
\endnotes{Notes}
```

**Result:**

### Notes

1. You should not mix footnotes and endnotes.
2. Use one or the other.

---

### Figures and Tables

A figure or table number will be produced whenever a `\caption`[*entry*]{*heading*} command appears within a **figure** or **table** environment. You can use the *entry* option to specify an alternative heading for the List of Figures or List of Tables. If you do not use this option, the *heading*—the actual text of the caption—will be used. These environments are of the form

`\begin{figure}`[*loc*] *body* `\end{figure}`

or

`\begin{table}`[*loc*] *body* `\end{table}`

where *body* is the actual figure or table. Use the *loc* option to specify the location of the figure or table. Possibilities for placement are **h** (here), **t** (top), **b** (bottom), and **p** (page). You should always include the **p** option with any other options. If you do not specify a location, the default is **tbp**. The figure or table will be placed on the first page on which space is available for the entire body of your figure or table. The number is generated within the chapter or appendix when ever a `\caption` is used. Therefore you may use `\caption` more than once within the figure or table environment. This is especially nice if you want 2 figures or tables to be kept together on one page. See page 13 for examples of multiple captions in one figure environment and single caption in a table environment.

You may find it difficult to convince LaTeX to put your figure or table where you want it. It is best to place the figure or table environment commands close to where you think the top of a new page will start.

**Note:** This environment is meant to create a floating area within your document. It does NOT actually create a table or figure, you need to use the **tabular** environment for tables (Leslie Lamport's book, pages 63 and 182) and the **picture** environment for figures (Leslie Lamport's book, pages 101 and 196). These other environments are part of LaTeX, however you can use other graphics packages to import graphics. These graphics must be compatible with your printer.

### Full Page Figures and Tables

To create a full page figure or table you need to use `\vbox` to make an imaginary box the height of the entire page. For normal full page figures and tables, where a figure or table will not be pasted in later, use the following method. The figure or table will be centered vertically on the page.

**Full Page Figure:**

---

```
\begin{figure}
\vbox to \textheight{%
\vfill
[the body of the figure goes here]
\caption{This is My Full Page Figure}
\vfill}
\end{figure}
```

---

**Full Page Table:**

---

```
\begin{table}
\vbox to \textheight{%
\vfill
\caption{This is My Full Page Table}
[the body of the table goes here]
\vfill}
\end{table}
```

---

The examples below show how to create a full page figure or table that will be pasted in later.

### Paste-in Full Page Figure

The top of the page is blank with whe caption is flush at the bottom of the page.

---

```
\begin{figure}
\vbox to \textheight{%
\vfill
\caption{This is Paste-in My Full Page Figure}}
\end{figure}
```

---

### Paste-in Full Page Table

The caption is flush at the top of the page and the rest of the page is blank.

---

```
\begin{table}
\vbox to \textheight{%
\caption{This is Paste-in My Full Page Table}
\vfill}
\end{table}
```

---

## CREATING CROSS-REFERENCES IN UDTHESIS FORMAT

All referencing is done by using the `\label{`*key*`}` command where *key* is the word you use to refer to the number of the chapter, appendix, section, subsection, subsubsection, equation, figure, or table. Once you have assigned this key, you can refer to the number (of the appropriate section) by using `\ref{`*key*`}` and to the appropriate page by using `\pageref{`*key*`}` (to refer to the page number). These commands do not insert text before the numbers. This means that you must insert the word "chapter," "appendix," "section," "subsection," "subsubsection," "equation," "figure," or "table" before the `\ref` and `\pageref` commands. You should use a "`~`" between the proper word and `\ref` and `\pageref` to prevent a line break from occurring between the word and the number that follows it. There can be no spaces before or after the "`~`" (see examples below).

**Note:** If you want a reference to be within another macro, like `\chapter`, `\section`, `\caption`, etc., then you must use `\protect` before that reference command. For example

---

```
\begin{figure}
\vspace*{4.5in}
\caption{Referencing another figure, see figure\protect\ref{fig1}}
\label{fig3}
\end{figure}
```

---

### Referring to a Chapter, Appendix or Section

The next example illustrates references to a section and a subsection. References to all other sectioning commands would work in the same way.

---

**What you type**:

```
\section{This is the first section}
\label{sec1}
In section one, we will present our hypothesis.

\subsection{This is the first subsection}
\label{ssec1}
In section~\ref{sec1} on page~\pageref{sec1}, you will
find the statement of our hypothesis. It is explained more fully in
section~\ref{ssec1} on page~\pageref{ssec1}.
```

**Result**:

## 1.1 This is the first section

In section one, we will present our hypothesis.

### 1.1.1 This is the first subsection

In section 1.1 on page 12, you will find the statement of our hypothesis. It is explained more fully in section 1.1.1 on page 12.

---

### Referring to Tables and Figures

According to the Graduate School guidelines, figure numbers and captions must be **below** the figure, while table numbers and captions must be **above** the table. The following example shows how to create and refer to a figure.

---

**What you type**:

```
\begin{figure}[h]
[The body of the first figure goes here.]
\caption{Circuit Diagram I - 1935}
\label{fig1}
\vspace*{1.5in}
[The body of the second figure goes here.]
\caption{Circuit Diagram I - 1936}
\label{fig2}
\end{figure}

Figure~\ref{fig1} on page~\pageref{fig1} shows the circuit diagram used
for the preliminary SDI research in 1935 and figure~\ref{fig2} on
page~\pageref{fig2} in 1936.
```

**Result**:

[The body of the figure goes here.]

**Figure 1.1:** Circuit Diagram - 1936

[The body of the second figure goes here.]

**Figure 1.2:** Circuit Diagram I - 1936

Figure 1.1 on page 13 shows the circuit diagram used for the preliminary SDI research in 1935 and figure 1.2 on page 13 in 1936.

---

The next example shows how to create and refer to a table.

---

**What you type**:

```
\begin{table}[h]
\caption{Table Example - 1987 Budget Report}
[The body of the table goes here.]
\label{tab1}
\end{table}

Table~\ref{tab1} on page~\pageref{tab1} shows an example of where to place
a table caption.
```

**Result**:

**Table 1.1:** Table Example - 1987 Budget Report

[The body of the table goes here.]

Table 1.1 on page 14 shows an example of where to place a table caption.

---

### Referring to Equations

To refer to an equation number, you must use one of the math environments that number equations. They are

`\begin{equation}` *formula* `\end{equation}`

or

`\begin{eqnarray}` *formula* `\end{eqnarray}`

where *formula* is the math equation that you supply. To define a label for an equation number, you must put the `\label{`*key*`}` command on the line of the formula to which you want to refer.

The following example shows how to generate equation numbers for a single and a multilined equation.

---

**What you type**:

```
\begin{equation}
x = {x \over 2} \label{equ1}
\end{equation}

\begin{eqnarray}
x & = & 17y \label{equ2}\\
y & > & a+b+c+d+ \nonumber\\
  &   & e+f+g
\end{eqnarray}

Equation~\ref{equ1} on page~\pageref{equ1} is an example of a simple
displayed equation and equation~\ref{equ2} on page~\pageref{equ2} is
an example of a multilined equation.
```

**Result**:

$$x = \frac{x}{2} \tag{1.1}$$

$$\begin{aligned} x &= 17y && (1.2)\\ y &> a+b+c+d+ \\ &\quad e+f+g && (1.3) \end{aligned}$$

Equation 1.1 on page 15 is an example of a simple displayed equation and equation 1.2 on page 15 is an example of a multilined equation.

---

# LIST OF REFERENCES

In LaTeX, you can create a bibliography or list of references in two ways. You can either produce a list of sources yourself or use a separate program called BibTeX to generate a list from information you have stored in a bibliographic database. Both methods are explained in detail in Leslie Lamport's LaTeX book, section 4.3.

**Note:** If you want to cite a reference within another macro, like `\chapter`, `\section`, `\caption`, etc., then you must use `\protect` before that `cite` command. For example

---

```
\begin{figure}
\vspace*{4.5in}
\caption{Very important figure\protect\cite{Abr86}}
\label{fig4}
\end{figure}
```

---

### Using BibTeX

BibTeX is a separate program from LaTeX. This program creates a **.bbl** file that will be read by LaTeX to create references to sources that you cite in your thesis with the `\cite` command. The **.bbl** file that BibTeX creates is taken from a bibliographic database file that contains information about your sources. This database file must have the extension **.bib** and must follow a specific format. For the format, consult the LaTeX book or the BibTeX document in the Smith Consulting Center (002 Smith Hall). Once you have created the **.bib** file, you tell LaTeX to use it by including the following command in your **main.tex** file:

`\bibliography{`*file(s)*`}`

where *file*(*s*) is the name of your **.bib** file or files. See the example in the Appendix on page 32 for including the `\bibliography` command in your **main.tex** file. If you have more than one bibliographic database file, separate each file name with a comma. For example, if you have two databases—**acs.bib** and **ait.bib**, you would use the form `\bibliography{acs,ait}`.

After you have included your database files in the **main.tex** file, you must select a bibliography style file with the command

`\bibliographystyle{`*type*`}`

where *type* can be one of four styles:

- **plain**–sorted alphabetically with numbered labels
- **unsrt**–listed in order of citing in the text; numbered labels
- **alpha**–sorted alphabetically with labels formed from author's name and the year of publication
- **abbrv**–same as **plain** except that first names, and names of months and journals are abbreviated

To refer to the bibliography item in your text, use the `\cite` command. If you would like to have a bibliography entry included in your list of references but not cited in your text, you can refer to it using the `\nocite` command. You can place this command anywhere after the `\begin{document}` command.

Once you have created your database file and included the appropriate references to it in your **main.tex** file and the citations in your individual chapter files, you run your **main.tex** file through LaTeX, then through BibTeX, and then through LaTeX again. This process will create the **.bbl** file and allow it to be used by LaTeX.

In general if you make a bibliographic database and want to use it with LaTeX, do the following

- **latex** *filename*
- **bibtex** *filename*
- **latex** *filename*

where *filename* is the name of your **main.tex** file.

**Note:** If you add or remove any citations in your database file, you will have to rerun your **main.tex** file through LaTeX, then through BibTeX, and then through LaTeX again.

The following example shows the format for book entries in a **.bib** file.

---

```
@book(lov78,
author = "Donald W. Loveland",
title = "Automated Theorem Proving: A Logical Basis",
publisher = "North-Holland Publishing Company",
year = 1978,
address = "New York")
```

---

### Creating a List of Sources Yourself

Following is some necessary information for creating a list of sources yourself using the **thebibliography** environment. You use the **thebibliography** environment whether you want your list of references to be called "REFERENCES" or "BIBLIOGRAPHY." Begin the environment with

`\begin{thebibliography}` {*label width*}

and end it with

`\end{thebibliography}`

The **thebibliography** environment is like the LaTeX list environments except that

- Each item begins with a `\bibitem` command. This command is followed by a key by which the item can be cited in the text with a `\cite` command.
- The **thebibliography** environment includes a *label width*, that is, a number or series of letters that is the same width as or slightly wider than the widest item label in your list of sources. (For example, if your list has 500 entries, you might choose "999" as your label width because "999" is as wide as all other three-digit numbers.)

You can choose what to call your references section by redefining `\bibname` with the name of the title before **thebibliography** environment command.

The following example shows how you would construct a **thebibliography** environment, how you would cite a source in your text and change the title of your references to "References" rather than "Bibliography".

---

```
\renewcommand{\bibname}{References}
\begin{thebibliography}{999}
\bibitem{Catt1} Cattell, R.B. 1966. ``The Screen Test for the Number of
        Factors.'' {\it Multivariate Behavior Research}, 1: 245-276.
\end{thebibliography}

See \cite{Catt1} for more information on the test.
```

---

# ADDITIONAL COMMANDS

### Hanging Indent References

Hang indent references can be created with the **thereferences** environment. To use this environment:

---

**What you type**:

```
\begin{thereferences}
Leslie Lamport, \LaTeX: {\it A Document Preparation System} (User's
Guide and Reference Manual), 1986, Addison-Wesley, Reading, Massachusetts.

Donald Knuth, {\it The \TeX book}, 1986, Addison-Wesley, Reading,
Massachusetts.
\end{thereferences}
```

**Result**:

## REFERENCES

Leslie Lamport, LaTeX: *A Document Preparation System* (User's Guide and Reference Manual), 1986, Addison-Wesley, Reading, Massachusetts.

Donald Knuth, *The TeXbook*, 1986, Addison-Wesley, Reading, Massachusetts.

---

This will produce the title **REFERENCES**; however, you can specify a title using the option format

```
\renewcommand{\bibname}{Bibliography}
\begin{thereferences} .. \end{thereferences}
```

### Continuing Figures and Tables

To continue a figure or table on another page without adding another figure or table number, you can use the `\captioncont{}` command as follows:

---

**What you type**:

```
\begin{figure}
     [The first part of the figure goes here.]
\caption{This is my picture}
\end{figure}

\begin{figure}
     [The second part of the figure goes here.]
\captioncont{continued}
\end{figure}
```

**Result**:

[The first part of the figure goes here.]

**Figure 1.1:** This is my picture

[The second part of the figure goes here.]

**Figure 1.1:** continued

---

Note that the figure number is the same for the second figure when using `\captioncont`. If you were using the table environment instead of the figure environment (as in the above example), then the table number would be the same if you used `\captioncont`.

### Glossary or List of Symbols

To create a glossary or list of symbols a **desc** environment has been created. You can use this environment as follows:

---

**What you type**:

```
\prefacesectiontoc{Glossary}
\begin{desc}
\item[cat] A carnivorous mammal domesticated since early times as a catcher of
rats and mice and as a pet.
\item[mouse]  Any of numerous small rodents of the families Muridae and
Cricetidae, such as the common house mouse, characteristically having a long,
naked or almost hairless tail.
\item[mousetrap] A trap for catching mice.
\end{desc}
```

**Result**:

## GLOSSARY

**cat** A carnivorous mammal domesticated since early times as a catcher of rats and mice and as a pet.

**mouse** Any of numerous small rodents of the families Muridae and Cricetidae, such as the common house mouse, characteristically having a long, naked or almost hairless tail.

**mousetrap** A trap for catching mice.

---

This will align all definitions after the words or symbols. A maximum label width of one inch is provided for each item.

# ORDER OF THE UDTHESIS SECTIONS

The order in which you generate the parts of your documents is critical. To have your page and section numbers generated correctly, you need to follow this ordering:

Title and Approval Page
Acknowledgments
Preface
Contents–the table of contents
FigureContents–the list of figures
TableContents–the list of tables
Abstract
Summary
(body of thesis, dissertation, or executive posistion paper)

**Note**–The page numbers in these parts (except for the body of the thesis) are in lower-case Roman numerals; the page numbers throughout the remainder of the thesis are in Arabic numerals. This change in style is automatic and occurs when UDThesis produces each part.

### Title and Approval Page

UDThesis uses a series of commands to make the formatting of title and approval page easy. Generally, there is some standard text associated with each command which appears only if you include the command. Note that all the commands are in lower case; this is how they must appear in your document or an error will occur. The commands are

---

**Title Page**:

```
\title{Title of paper}
        % To indicate a new line in the title, use \linebreak
        % at the end of each line but the last. The title is converted to
        % upper case automatically.
\author{name of author}
\type{type of document} % e.g., thesis, dissertation or
                        %       executive position paper
\degree{name of degree} % e.g., Master of ..., Doctor of Philosophy or
                        %       Doctor of Education
\educationtrue or \educationfalse
        %To indicate whether or not the document is an executive
        %position paper.
        %Default is \educationfalse.
\majorfieldtrue or \majorfieldfalse
        % To indicate whether or not a major is to be included.
        % Default is \majorfieldfalse.
\majorfield{name of majorfield} % e.g., Physics
        % Include only if you used \majorfieldtrue.
\degreedate{date degree is to be granted} % e.g., Fall 1993
                                          %       Spring 1993
                                          %       Summer 1993
```

**Approval Page**:

```
\prof{name, highest degree of your thesis adviser}
        %Do not use for dissertation or executive position paper.
\prof{name, highest degree of your second thesis adviser}
        %Do not use for dissertation or executive position paper.
\chair{name, highest degree of Chair}{position (title) of Chair}         (1)
\auxchair{name, highest degree of AuxChair}{position (title) of AuxChair}(2)
\dean{name, highest degree of Dean}{position (title) of Dean}            (3)
```

**Statement and Signature Page**:(dissertation or executive position paper only)

```
\profmember{name, highest degree of your thesis adviser}
\member{member of dissertation committee}
        %Use for each member of your committee.
```

---

**Note for Thesis:** You must have at least three signatures on the Approval Page: the first must be your thesis adviser's (`\prof`); the second must be one of the following: (1) `\chair`, (2) `\auxchair`, or (3) `\dean`; LaTeX automatically places the third—Carol E. Hoffecker, Ph.D., Associate Provost for Graduate Studies—as the last signature on the Title and Approval page.

**Note for Dissertation and Executive Position Paper:** You do not use `\prof` on the Approval Page, this will be included on the Signature Page. The Signature Page requires at least four signatures: the first must be your adviser's (`\profmember`), and the rest should be the other members (`\member`) of your committee. This page can have at most six signatures.

**Examples for Title and Approval Page**

The following example illustrates the use of LaTeX to generate the Title and Approval Page and other information which will appear at the beginning of your document. You must insert this material at the **beginning** of your document to produce the Title and Approval Page. See the examples in the **Appendix** starting on page 32 for more help.

---

**Thesis Title and Approval Page:**

```
\title{Irradiation and Annealing Effects\\
   in Amorphous Alloys}
\author{John H. Poe}
\type{thesis}
\degree{Master of Science}
\majorfieldtrue\majorfield{Physics} % optional
\degreedate{Spring 1993}

\maketitlepage

\begin{approvalpage}
\prof{Jon B. Nill, Ph.D.}
\prof{K. Casey, Ph.D.} % use only if 2 advisers',
                       % otherwise, omit.
\chair{Willie B. Null, Ph.D.}{Chairman of the Department of Physics}
\end{approvalpage}

\begin{front}

\prefacesection{Acknowledgments}
   \input{acknowl}

\prefacesection{Preface}
   \input{dedicat}

\maketocloflot

\prefacesectiontoc{Abstract}
   \input{abstract}

\end{front}
```

---

**Dissertation or Executive Position Paper Title and Approval Page:**

```
\title{Irradiation and Annealing Effects\\
   in Amorphous Alloys}
\author{Dale S. Hoover}
\type{dissertation}
\degree{Doctor of Philosophy}
\majorfieldtrue\majorfield{Physics} % optional
\degreedate{Spring 1993}

\maketitlepage

\begin{approvalpage}
\chair{Willie B. Null, Ph.D.}{Chairman of the Department of Physics}
\end{approvalpage}

\begin{signedpage}
\profmember{John L. Smith, Ph.D.}
\member{Mary T. Less, Ph.D.}
\member{Harry S. Shipley, Ph.D.}
\member{Chang Lee, Ph.D.}
\end{signedpage}

\begin{front}
\prefacesection{Acknowledgments}
   \input{acknowl}

\prefacesection{Preface}
   \input{dedicat}

\maketocloflot

\prefacesectiontoc{Abstract}
   \input{abstract}

\end{front}
```

### Abstract with Title and Approval Page

UDThesis provides the necessary macros to prepare an abstract with its own title and approval page. You should make a *separate file* containing the necessary information and run it through LaTeX apart from the rest of the document in order to give correct page numbers. Below is a list of the possible macros to be used in the separate file to generate an abstract with its own title and approval page.

```
\documentclass {udthesis}
\begin{document}
\title{document title}
\author{author's name}
\type{dissertation}
\degree{Doctor of Philosophy}
\majorfieldtrue\majorfield{major field of study} %optional
\degreedate{Spring 1993}

\begin{abtandapage}
\abprof{adviser's name}
\abprof{second adviser's name}    % use only if 2 advisers',
                                  % otherwise omit
\end{abtandapage}

\prefacesection{Abstract}
   \input{abstract}
\end{document}
```

**Example Abstract with Title and Approval Page**

---

```
\documentclass {udthesis}
\begin{document}
\title{A Preliminary Evaluation of the\linebreak
       Delaware Cloud Seeding Project\linebreak
       Using a Principal Components-Based\linebreak
       Interpolation Model}
\author{Roh T. Uana}
\type{dissertation}
\degree{Doctor of Philosophy}
\majorfieldtrue\majorfield{Geography}
\degreedate{Spring 1993}

\begin{abtandapage}
\abprof{Theodore Q. Mentor, Ph.D.}
\end{abtandapage}

\prefacesection{Abstract}
\input{abstract}
\end{document}
```

---

### Senior Thesis Title and Approval Page

To format a senior thesis you need to use `documentclass [seniorthesis] {udthesis}` command.

Some changes have been made to the macros to produce a correct senior title and approval page. Generally, there is some standard text associated with each command which appears only if you include the command. Note that all the commands are in lower case; this is how they must appear in your document or an error will occur. The commands are

---

**Title Page**:

```
\title{Title of paper}
         % To indicate a new line in the title, use \linebreak
         % at the end of each line but the last. The title is converted to
         % upper case automatically.
\author{name of author}
\degree{name of degree} % e.g., Bachelor of Science, Bachelor of Arts
                        %       Bachelor of Civil Engineering, etc.
\majorfieldtrue or \majorfieldfalse
         % To indicate whether or not a major is to be included.
         % To be used when degree is Bachelor of Science or
         % Bachelor of Arts.
         % Default is \majorfieldfalse.
\majorfield{name of majorfield} % e.g., Physics
         % Include only if you used \majorfieldtrue.
\distinctiontrue or \distinctiontrue
         % To indicate whether or not a degree with distinction
         % Default is \distinctionfalse
\degreedate{date degree is to be granted} % e.g., Fall 1993
                                          %       Spring 1993
                                          %       Summer 1993
```

**Approval Page**:

```
\prof{name, highest degree of your thesis adviser}
\prof{name, highest degree of your second thesis adviser}
\member{name, highest degree of committee member}{department}
\ucosafhmember{name, highest degree of honors committee member}
\chair{name, highest degree of honors chair}
```

---

**Examples for Senior Thesis Title and Approval Page**

**Degree with Distinction**

```
\title{Low Temperature Specific Heat of\\
   Amorphous Nickel-Boron Alloys}
\author{Robert Motsay}
\degree{Bachelor of Science}
\majorfieldtrue\majorfield{Physics} % optional
\distinctiontrue
\degreedate{May 1993}

\maketitlepage

\begin{approvalpage}
\prof{David G. Onn, Ph.D.}
\member{Ferd Williams, Ph.D.}{Department of Physics and Astronomy}
\ucosafhmember{Arnold Kerr, Ph.D.}
\chair{Michael P. Rewa, Ph.D.}
\end{approvalpage}

\begin{front}

\prefacesection{Acknowledgments}
   \input{acknowl}

\prefacesection{Preface}
   \input{dedicat}

\maketocloflot

\prefacesectiontoc{Abstract}
   \input{abstract}

\end{front}
```

**Honors Degree**

```
\title{Literary Theory in the Critical\\
   Writings of Virginia Woolf}
\author{Jane J. Doe}
\degree{Bachelor of Arts}
\majorfieldtrue\majorfield{English} % optional
\degreedate{May 1993}

\maketitlepage

\begin{approvalpage}
\prof{Bonnie K. Scott, Ph.D.}
\member{Hans-Peter Breuer, Ph.D.}{Department of English}
\ucosafhmember{Patricia Leighten, Ph.D.}
\chair{Robert F. Brown, Ph.D.}
\end{approvalpage}

\begin{front}

\prefacesection{Acknowledgments}
   \input{acknowl}

\prefacesection{Preface}
   \input{dedicat}

\maketocloflot

\prefacesectiontoc{Abstract}
   \input{abstract}

\end{front}
```

# APPENDIX
# MORE EXAMPLE FILES

---

**main.tex**

```
\documentclass {udthesis}
\begin{document}
\include{tap}
\include{chap1}
\include{chap2}
\include{chap3}
\include{ref}
\end{document}
```

This example shows a main file that includes a bibliography you create yourself using the **thebibliography** environment.

---

**main.tex**

```
\documentclass {udthesis}
\begin{document}
\include{tap}
\include{chap1}
\include{chap2}
\include{chap3}
\bibliography{com}
\bibliographystyle{plain}
\end{document}
```

This example shows a main file that includes a bibliography created using BibTeX.

---

**chap1.tex**

```
\chapter{Introduction}
\section{The Delaware Cloud Seeding Project}
\subsection{Historical Background}
Attempts at weather modification from
aircraft, through the introduction of
foreign material into clouds, are
relatively recent phenomena.  It was a
dark and stormy night ...

Since clouds were first seeded, at
least .......
```

---

**ref.tex**

```
\renewcommand{\bibname}{References}
\begin{thebibliography}{999}
\bibitem {Bra1} Brahm, R.R., Jr.  1979.  ``Field Experimentation in
                Weather Modification.'' {\it Journal of the American
                Statistical Association}, 74(365): 57-68.

\bibitem {Catt1} Cattell, R.B.  1966.  ``The Screen Test for the Number
                 of Factors.'' {\it Multivariate Behavioral Research},
                 1: 245-276.
\end{thebibliography}
```

---

The Title of **thebibliography** will be **REFERENCES**

---

**abstract.tex**

```
An empirical method, based on principal
components analysis for the spatial
interpolation of daily rainfall,
is described and tested using...
```

---