The isuthesis package (LaTeX 2_ε)

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August 9, 1996

Chapter 1

Creating a Thesis

A thesis is normally a fairly long document so you probably don't want to put it all into one big file because it will be difficult to both compile and edit. The examples that follow in this handout use a master file system where the master file brings in all the other files that need to be used to create a complete thesis. Using a master file, you can break your thesis down into small, manageable parts that are easier to edit and quicker to compile.

This handout starts with a master file template for a simple Master's thesis, shows some standard thesis options and then expands to other types of templates from there. To start with, take a look at the sample Master's thesis and make sure you understand the mechanisms that are being used. When you are comfortable with the concepts being used then browse the rest of this document for a template of a thesis that is similiar to the thesis that you will be creating, copy that thesis example from the Exthesis directory and then continue on from there.

Currently the Exthesis directory in the newtex locker is located at: `/home/newtex/lib/texmf/tex/latex2e/isu/Exthesis/` but this location may change as LaTeX 2_ε develops. The current location of the Exthesis directory can always be found by entering **add newtex** and reading the information provided. The aareadme.dat file in the Exthesis directory contains up-to-date information on the files within that directory.

1.1 Master's Thesis Template

Here is a annotated template for a simple Master's thesis created to use the isuthesis package:

```
% Example thesis using the isuthesis package   ⟹Comment line.
% that shows a plain Master's thesis.          ⟹Anything after a % is a comment.
\documentclass{report}                          ⟹Chooses the document class report.
\usepackage{isuthesis}                          ⟹Loads in the isuthesis package.
\includeonly{titletocmas,chapter1}              ⟹Restricts which \include file are loaded.
\begin{document}                                ⟹Starts the document.
\include{titletocmas}                           ⟹Brings in file titletocmas.tex.
\newpage                                        ⟹Starts a new page.
\pagenumbering{arabic}                          ⟹Changes to arabic numbering.
\include{chapter1}                              ⟹Brings in file chapter1.tex.
\include{chapter2}                              ⟹Brings in file chapter2.tex.
\include{chapter3}                              ⟹Brings in file chapter3.tex.
\include{chapter4}                              ⟹Brings in file chapter4.tex.
\include{chapter5}                              ⟹Brings in file chapter5.tex.
\include{appendix1}                             ⟹Brings in file appendix1.tex.
\include{appendix2}                             ⟹Brings in file appendix2.tex.
\include{newbib}                                ⟹Brings in biblographic file newbib.tex.
\end{document}                                  ⟹Ends the document.
```

1.1.1 Notes

The \include and \includeonly commands

When LaTeX 2$_\varepsilon$ finds an `\include` command, it goes out to the current directory and looks for a file entitled filename**.tex** and includes that file in its entirety into the current document at the point of the `\include`. So, in essence, it brings the other file into the master document.

The `\includeonly` command restricts what files are actually brought into the master file for the current run of the thesis. Normally, you only work on one chapter at a time in a thesis; so why run the whole thesis when you can just run a couple of its parts. In the example here, if this file were compiled with LaTeX 2$_\varepsilon$, the only files that would be included into the master file would be: titletocmas.tex and chapter1.tex and LaTeX 2$_\varepsilon$ would ignore the other `\include` lines. To run the whole thesis, just put a % in front of the `includeonly` line which will cause all the `\include` lines to be included into the master file.

1.1.2 Options

Choosing a font size

On the `\documentclass{report}` line, you can also add options that alter the exact type of thesis that you are creating. For instance, by default the report class uses a 10pt font. If instead you would like to use a slightly bigger font like an 11pt font or a 12pt font, then you can alter the line as follows:

```
\documentclass[11pt]{report}
\documentclass[12pt]{report}
```

putting the document class option in brackets just before the name of the document class. You can use either the 10pt (default), 11pt or 12pt font set when creating a thesis at ISU.

Preamble Options

The following options can be put in the preamble area of a thesis (after the `\usepackage{isuthesis}` command and before the `\begin{document}` command) to make alterations to a thesis:

\usepackage{rotating}	⟹Adds ability to rotate .ps files.
\usepackage{subeqn}	⟹Adds extra equation numbering options.
\alternate	⟹Sectional numbering down to subsection.
\alternatenum	⟹Sectional numbering at all levels.
\alternatepart	⟹Sectional numbering at part level only.
\nochap	⟹Removes chapter numbering— used after ⟹\alternatenum for sectional numbering below chapter.

1.1.3 Viewing and printing a thesis

When you are using the master file system, you always want to *latex* only the master file and never any of the parts of the master file. So if the template file were named thesis.tex on Project Vincent, you would enter:

% **latex thesis.tex** — to compile your LaTeX 2ε thesis file. If the compilation is successful, LaTeX 2ε will produce a file entitled thesis.dvi.

To see the results of a successful compilation, you would enter:

% **xdvi thesis.dvi** — which allows you to view the .dvi output from your LaTeX 2ε thesis file. This command will only work in an X-Windows environment like a Project Vincent workstation.

To print out your thesis, you would enter:

% **dvips thesis.dvi** — which creates a thesis.ps file that you can print with the lpr command: `lpr thesis.ps`.

1.2 Creating a Thesis Title Page

Here is an annotated template for a simple Master's thesis title page from the file **titletocmas.tex**:

```
% Plain Master's Thesis                          ⟹Comment line.
\title{This is the title of a thesis              ⟹Thesis title.
submitted to Iowa State University\\              ⟹If the title is long, use \\
Note that only the first letter of                ⟹to break the thesis title at a logical
the first word and proper names                   ⟹point to have the thesis title
are capitalized}                                  ⟹go to a new line.
\author{Wilbur Terrance Johnson}                  ⟹Author's 'diploma-style' name.
\degree{MASTER OF SCIENCE}                        ⟹Full degree title.
\dept{Human Development and Family Studies}       ⟹Full Departmental name.
\major{Human Development and Family Studies       ⟹Full Name of Major.
(Marriage and Family Therapy)}
\mprof{Susan D. Ross}                             ⟹Major Professor's Name.
\notice                                           ⟹Optional: Adds copyright notice.
\maketitle                                        ⟹Makes title and signature pages.
\tableofcontents                                  ⟹Makes 'Table of Contents' pages.
\listoftables                                     ⟹Optional: Makes 'List of Tables'.
\listoffigures                                    ⟹Optional: Makes 'List of Figures'.
```

1.2.1 Notes

Command requirements

The `\dept` command will not work without the `\major` command.

Doctoral Dissertation

If you are doing a Doctoral dissertation instead of a Master's thesis, you should also add the lines `\level{Doctoral}` and `\format{dissertation}` before the `\maketitle` command.

Doctoral Abstract

The thesis office wants a Doctoral abstract to be a completely separate document that is handed in with the final copy of a Doctoral thesis. Here ia an example file that shows a basic template for a Doctoral abstract as a separate document:

```
% An example doctoral abstract using the isuthesis package.
\documentclass{report}
\usepackage{isuthesis}
\begin{document}
\include{titletocdr}
\newpage
```

```
\pagenumbering{arabic}
\startabstract
\begin{doublespacing}

Abstract information here cannot exceed 350 words.
\end{doublespacing}
\end{document}
```

1.2.2 Options

Title page options

Below are a variety of other commands that are available to put additional items on the isuthesis package title page or signature page:

\committee{4}	⟹# of committee signature lines.
\mprofs{Susan D. Ross and Gregory McMann}	⟹Co-major professors.
\codepts{Community Planning;}{Architecture}	⟹Co-departments.
\comajors{Community Planning;}{Architecture}	⟹Co-majors.
\minor{Music}	⟹Subject minor.
\interdept	⟹Interdepartmental Program—
\dept{Biomedical Engineering}	⟹goes just before \dept.
\interdeptm	⟹Interdepartmental Major—
\major{Developmental Biology}	⟹goes just before \major.
\signmajornum=3	⟹# of major prof. signature lines.
\signdeptnum=3	⟹# of dept. signature lines.
\copyyear{1996}	⟹Year of thesis subsmission.
\signdept{Architecture}	⟹Title used for dept. signature.
\signmajor{Biology}	⟹Title used for major signature.

Post-\begin{document} page options

The following options can be put after the \begin{document} command and before (or just after) the title page to make alterations to a thesis:

\bibliographystyle{isuplain}	⟹Sets BIBTEX biblio. style.
\chaptertitle	⟹Adds 'Chapter' before chapter #.
\include{abstract}	⟹Brings in abstract.tex.

An abstract page, achknowledgements page or both can follow the title page. Here is an example abstract from the file **abstract.tex**:

```
% Example of a Master's Thesis Abstract (Optional)
\specialchapt{ABSTRACT}

This is the text of the abstract that will be included as part
of the thesis. This page is numbered as a preliminary page.
The heading style and text spacing will match that used in the main text.
```

1.3 Creating Thesis Chapters

Here is an annotated template for a chapter from a simple Master's thesis edited from the file **chapter1.tex**:

```
% Plain Master's Thesis                                  ⟹Comment line.
\chapter{OVERVIEW}                                       ⟹Titles the Chapter.
This is the opening paragraph to my thesis which         ⟹Thesis text.
explains in general terms the concepts and hypothesis    ⟹More thesis text.
which will be used in my thesis.                         ⟹Use a blank line—
                                                         ⟹to go to a new paragraph.
With more general information given here than            ⟹Text.
really necessary.                                        ⟹More text.
\section{Introduction}                                   ⟹Titles this section.
Here initial concepts and conditions are explained       ⟹Text.
and several hypothesis are mentioned in brief.           ⟹More text.
\subsection{Hypothesis}                                  ⟹Titles this subsection.
Here one particular hypothesis is explained in depth     ⟹Text.
and is examined in the light of current literature.      ⟹More text.
\subsubsection{Parts of the hypothesis}                  ⟹Titles this subsubsection.
Here one particular part of the hypothesis that is       ⟹Text.
currently being explained is examined and particular     ⟹More text.
elements of that part are given careful scrutiny.        ⟹Still more text.
\paragraph{An unusual error in part c of the hypothesis} ⟹Titles this paragraph.
Here I given details and information on                  ⟹Text.
the part of the hypothesis that has an error             ⟹More Text.
in it which may add to further complications.            ⟹Still more text.
\subparagraph{Details of the error}                      ⟹Titles this subparagraph.
Here I give even more detailed information than before   ⟹Text.
on the error and eventually put everyone to sleep.       ⟹Even more text.
```

1.3.1 Notes

Sectioning commands available in isuthesis

The following standard LaTeX sectioning commands are available in the isuthesis package:

```
\part       \subsection      \paragraph
\chapter    \subsubsection   \subparagraph
\section
```

Don't number your section levels— let LaTeX 2_ε do that for you. See subsection **??** for more information on changing the standard isuthesis package numbering style.

Levels of sectioning

A chapter that contains a section should have two or more sections— a section that contains a subsection should have two or more subsections— a subsection that contains a subsubsection should contain two or more subsubsections. . . or, more generally speaking, don't use a lower subdivision of sectioning unless you have two or more units of that sectioning.

1.3.2 Options

Usual chapter options

The following command options can be used within or around thesis chapters to make alterations to a thesis:

\newpage	⟹Go to a new page.
\footnote{Ibid.}	⟹Creates a footnote.
\begin{singlespacing}	⟹Start a single-spacing environment.
\end{singlespacing}	⟹End a single-spacing environment.
\begin{onehalfspacing}	⟹Start a onehalf-spacing environment.
\end{onehalfspacing}	⟹End a onehalf-spacing environment.
\begin{doublespacing}	⟹Start a double-spacing environment.
\end{doublespacing}	⟹End a double-spacing environment.

Unusual chapter options

The following command options can be used within or around thesis chapters to make alterations to a thesis:

\reset	⟹Resets most chapter level counters.
\specialchapt{Overview}	⟹Start a new chapter with no chapter numbering.
\specialchapter{Overview}	⟹Like \specialchapt but different TOC level.
\startabstract	⟹Sets up a header for an abstract.
\paperinfo{Unpublished}	⟹Paper information for header.
\paperauthor{Jane Smith}	⟹Paper author info for header.
\part{Paper}	⟹Sectional level above \chapter—
	⟹mainly used to organize chapters into a paper.
\specialpart{Paper}	⟹Starts a new part with no part numbering.

Warning: use some of these options with extreme caution. Too much tinkering can destroy the overall effect of a documentclass or package.

1.4 Creating a Thesis Appendix & Bibliography

Here is an annotated template for an appendix from a simple Master's thesis edited from the file **appendix1.tex**:

```
% Plain appendix1                          ⟹Comment line.
\appendixtitle                             ⟹Adds 'Appendix' before appendix #.
\appendix                                  ⟹Alters \chapter to create appendix.
\chapter{EXTRA TABLES AND FIGURES}         ⟹Titles first appendix.
This is the opening paragraph to my        ⟹Thesis text.
appendix which explains the figures        ⟹More thesis text.
and tables that will be displayed.         ⟹Even more text.
\section*{Initial Concepts}                ⟹Section title *-form so not in TOC.
Here initial concepts are explained        ⟹Text.
and several tables are shown in brief.     ⟹More text.
```

Here is an annotated template for a second appendix from **appendix2.tex**:

```
% Plain appendix2                          ⟹Comment line.
\chapter{MORE TABLES AND FIGURES}          ⟹Titles second appendix.
This is the opening paragraph to my        ⟹Thesis text.
appendix which explains the figures        ⟹Same form as appendix1.
and tables that will be displayed.         ⟹Etc.
\section*{Initial Concepts}                ⟹Section title *-form so not in TOC.
Here initial concepts are explained        ⟹Etc.
and several tables are shown in brief.     ⟹Etc.
```

Here is an annotated template for a biblography from **newbib.tex**:

```
% Sample plain bibliography                ⟹Comment line.
\specialchapt{BIBLIOGRAPHY}                ⟹Titles Chapter (no number/header)
\interlinepenalty=300                      ⟹Raises paragraph break penalty.
\begin{singlespace}                        ⟹Starts singlespace mode.
\begin{hangpar}                            ⟹Starts hanging paragraph mode.
                                           ⟹Blank line starts new citation.
Bruner, J. (1960).                         ⟹Citation begins.
{\em The process of education}.            ⟹Citation continues.
New York: Random House.                    ⟹Citation ends.
\filbreak                                  ⟹Goes to new page if near bottom.
                                           ⟹Blank line starts new citation.
Papert, Seymour. (1980).                   ⟹Citation begins.
{\em Mindstorms: Children,                 ⟹Citation continues.
computers, and powerful ideas}.            ⟹Citation continues.
New York: Basic Books.                     ⟹Citation ends.
\end{hangpar}                              ⟹Ends hanging paragraph mode.
\end{singlespace}                          ⟹Ends singlespace mode.
```

1.4.1 Notes

Appendix Notes

The `\appendixtitle` command puts in the word 'Appendix' before the appendix number.

The `\appendix` command alters the `\chapter` command and turns any further chapter(s) in the document into appendices. The `\appendix` command should only be used once.

The *-form of the `\section`, `\subsection`, `\subsubsection`, `\paragraph` and `\subparagraph` commands should be used in an appendix to keep these levels of sectioning out of the "Table of Contents".

Notes on the Biblography

The biblographic example **newbib.tex** shows a very plain biblography without biblographic labeling.

The hangpar environment (`\begin{hangpar}`) creates a hanging paragraph mode where the first line of a paragraph hangs out from the rest of the paragraph as shown by this paragraph. Biblographic citations are often shown in a singlespace environment.

The `\interlinepenalty=300` command and the `\filbreak` commands are optional but are included to make sure that a bibliographic citation does not cross a page boundary as that is often considered to be unacceptable.

1.4.2 Options

Appendix options

If you have only one appendix, instead of multiple appendices: 1.) don't use `\appendixtitle`, 2.) use the `\singleappendix` command in place of the `\appendix` command and 3.) use `\specialchapt{APPENDIX\ \ TITLE}` instead of `\chapter` where TITLE is the title of your appendix.

The `\appendixtitle` command is currently a **required** appendix option unless you are using `\singleappendix`.

The `\unappendixtitle` command removes the word 'Appendix' before the start of a additional chapter(s) in your document. This is useful if you are using a formal LaTeX bibliography.

Bibliographic options

Other more formal forms of LaTeX biblographies are shown in Section **??** including the use of BIBTEX and a biblographic environment that uses \bibitem(s).

Chapter 2

Thesis Examples

The following chapter shows edited examples of thesis from the Exthesis directory that is currently located at:
`/home/newtex/lib/texmf/tex/latex2e/isu/Exthesis/`.

Included is the **filename** of the example, a brief **summary** that describes the example and **notes** on any unusual features. The first thesis shown is the simple Master's thesis that was covered in Chapter **??**.

2.1 thesism

Simple Master's Thesis

File: thesism.tex

```
\documentclass{report}
\usepackage{isuthesis}
\includeonly{titletocmas}
\begin{document}
\include{titletocmas}
\newpage
\pagenumbering{arabic}
\include{chapter1}
\include{chapter2}
\include{chapter3}
\include{chapter4}
\include{chapter5}
\include{appendix1}
\include{appendix2}
\include{newbib}
\end{document}
```

File: titletocmas.tex

```
% Plain Master's Thesis
\title{This is the title of a thesis
submitted to Iowa State University\\
Note that only the first letter of
the first word and proper names
are capitalized}
\author{Wilbur Terrance Johnson}
\degree{MASTER OF SCIENCE}
\dept{Human Development and
Family Studies}
\major{Human Development and
Family Studies
(Marriage and Family Therapy)}
\mprof{Susan D. Ross}
\notice
\maketitle
\tableofcontents
\listoftables
\listoffigures
```

File: chapter1.tex

```
\chapter{OVERVIEW}

This is the opening paragraph
to my thesis which explains
in general terms the concepts
and hypothesis that will be used
in my thesis.

\section{Introduction}
Here initial concepts and conditions
are explained and several hypothesis
are mentioned in brief.
```

File: appendix1.tex

```
\appendixtitle
\appendix
\chapter{EXTRA TABLES AND FIGURES}
This is the opening paragraph to my
appendix which explains
the figures and tables that will
be displayed.
\section*{Initial Concepts}
Here initial concepts are explained
and several tables are shown in brief.
```

File: appendix2.tex

```
\chapter{MORE TABLES AND FIGURES}
This is the opening paragraph to my
appendix which explains
the figures and tables that will
be displayed.
```

File: newbib.tex

```
\specialchapt{BIBLIOGRAPHY}
\interlinepenalty=300
\begin{singlespace}
\begin{hangpar}

Bruner, J. (1960).
{\em The process of education}.
New York: Random House.
\filbreak

Papert, Seymour. (1980).
{\em Mindstorms: Children, computers,
and powerful ideas}. New York:
Basic Books.
\end{hangpar}
\end{singlespace}
```

Notes: Simple Master's Thesis as shown in detail in Chapter **??**.

2.2 thesisabs

Master's Thesis with an abstract

File: thesisabs.tex

```
\documentclass{report}
\usepackage{isuthesis}
\includeonly{titletocmas,abstract}
\begin{document}
\include{titletocmas}
\include{abstract}
\newpage
\pagenumbering{arabic}
\include{chapter1}
\include{chapter2}
\include{chapter3}
\include{chapter4}
\include{chapter5}
\include{appendix1}
\include{appendix2}
\include{newbib}
\end{document}
```

File: titletocmas.tex

```
% Plain Master's Thesis
\title{This is the title of a thesis
submitted to Iowa State University\\
Note that only the first letter of
the first word and proper names
are capitalized}
\author{Wilbur Terrance Johnson}
\degree{MASTER OF SCIENCE}
\dept{Human Development and
Family Studies}
\major{Human Development and
Family Studies
(Marriage and Family Therapy)}
\mprof{Susan D. Ross}
\notice
\maketitle
\tableofcontents
\listoftables
\listoffigures
```

File: abstract.tex

```
\specialchapt{ABSTRACT}

This is the text of the abstract
that will be included as part
of the thesis.  This page is
numbered as a preliminary page.
The heading style and text
spacing will match that used in
the main text.
```

File: chapter1.tex

```
\chapter{OVERVIEW}

This is the opening paragraph
to my thesis which explains
in general terms the concepts
and hypothesis that will be used
in my thesis.

\section{Introduction}
Here initial concepts and conditions
are explained and several hypothesis
are mentioned in brief.
```

File: appendix1.tex

```
\appendixtitle
\appendix
\chapter{EXTRA TABLES AND FIGURES}
This is the opening paragraph to my
appendix which explains
the figures and tables that will
be displayed.
\section*{Initial Concepts}
Here initial concepts are explained
and several tables are shown in brief.
```

File: newbib.tex

```
\specialchapt{BIBLIOGRAPHY}
\interlinepenalty=300
\begin{singlespace}
\begin{hangpar}

Bruner, J. (1960).
{\em The process of education}.
New York: Random House.
\end{hangpar}
\end{singlespace}
```

Notes: Note the location of the `\include{abstract}` command. You can create a dedication page using this same design.

2.3 thesisdr

Plain Doctoral Dissertation

File: thesisdr.tex

```
\documentclass{report}
\usepackage{isuthesis}
\includeonly{titletocdr}
\begin{document}
\include{titletocdr}
\newpage
\pagenumbering{arabic}
\include{chapter1}
\include{chapter2}
\include{chapter3}
\include{chapter4}
\include{chapter5}
\include{appendix1}
\include{appendix2}
\include{newbib}
\end{document}
```

File: titletocdr.tex

```
\title{This is the title of a thesis
submitted to Iowa State University\\
Note that only the first letter of
the first word and proper names
are capitalized}
\author{Wilbur Terrance Johnson}
\degree{DOCTOR OF PHILOSOPHY}
\level{Doctoral}
\format{dissertation}
\dept{Human Development
and Family Studies}
\major{Human Development
and Family Studies
(Marriage and Family Therapy)}
\mprof{Susan D. Ross}
\committee{4}
\notice
\maketitle
\tableofcontents
\listoftables
\listoffigures
```

File: chapter1.tex

```
\chapter{OVERVIEW}

This is the opening paragraph
to my thesis which explains
in general terms the concepts
and hypothesis that will be used
in my thesis.

\section{Introduction}
Here initial concepts and conditions
are explained and several hypothesis
are mentioned in brief.
```

File: appendix1.tex

```
\appendixtitle
\appendix
\chapter{EXTRA TABLES AND FIGURES}
This is the opening paragraph to my
appendix which explains
the figures and tables that will
be displayed.
\section*{Initial Concepts}
Here initial concepts are explained
and several tables are shown in brief.
```

File: appendix2.tex

```
\chapter{MORE TABLES AND FIGURES}
This is the opening paragraph to my
appendix which explains
the figures and tables that will
be displayed.
```

File: newbib.tex

```
\specialchapt{BIBLIOGRAPHY}
\interlinepenalty=300
\begin{singlespace}
\begin{hangpar}

Bruner, J. (1960).
{\em The process of education}.
New York: Random House.
\filbreak

Papert, Seymour. (1980).
{\em Mindstorms: Children, computers,
and powerful ideas}. New York:
Basic Books.
\end{hangpar}
\end{singlespace}
```

Notes: Note the use of `\level{Doctoral}` and `\format{dissertation}` in the **titletocdr.tex** file.

2.4 thesisdrabs

A Doctoral Abstract

File: thesisdrabs.tex

```
\documentclass{report}
\usepackage{isuthesis}
\begin{document}
\include{titletocdr}
\newpage
\pagenumbering{arabic}
\startabstract
\begin{doublespacing}

This is the format of the abstract
that will turned in by
all doctoral students.  The pages
are numbered separately
from the dissertation and require
a second \LaTeXe\
document to be created using
the title page information from
the original doctoral dissertation
and containing the startabstract
command before the actual text of the
abstract and the doublespacing
environment around the abstract.
The headings must include only
the information shown above.
The text must be double spaced
regardless of the text spacing
used in the text of the
disseration and cannot
exceed 350 words.
\end{doublespacing}
\end{document}
```

Notes: This is a separate file from your thesis file that is run all by itself.

Note the use of both the doublespace environment and the `\startabstract` command.

2.5 thesismulti

Master's Thesis with just about all title page options.

File: thesismulti.tex

```
\documentclass{report}
\usepackage{isuthesis}
\includeonly{titletocmulticom}
\begin{document}
\include{titletocmulticom}
\newpage
\pagenumbering{arabic}
\include{chapter1}
\include{chapter2}
\include{chapter3}
\include{chapter4}
\include{chapter5}
\include{appendix1}
\include{appendix2}
\include{newbib}
\end{document}
```

File: titletocmulticom.tex

```
\title{This is the title of a thesis
submitted to Iowa State University\\
Note that only the first letter of
the first word and proper names
are capitalized}
\author{Wilbur Terrance Johnson}
\degree{MASTER OF COMMUNITY AND
REGIONAL PLANNING\\
MASTER OF LANDSCAPE ARCHITECTURE}
\codepts{Community and Regional
Planning;}{Landscape Architecture}
\comajors{Community and Regional
Planning;}{Landscape Architecture}
\mprofs{Susan D. Ross
and Gregory McMann}
\committee{4}
\notice
\maketitle
\tableofcontents
\listoftables
\listoffigures
```

File: chapter1.tex

```
\chapter{OVERVIEW}

This is the opening paragraph
to my thesis which explains
in general terms the concepts
and hypothesis that will be used
in my thesis.

\section{Introduction}
Here initial concepts and conditions
are explained and several hypothesis
are mentioned in brief.
```

File: appendix1.tex

```
\appendixtitle
\appendix
\chapter{EXTRA TABLES AND FIGURES}
This is the opening paragraph to my
appendix which explains
the figures and tables that will
be displayed.
\section*{Initial Concepts}
Here initial concepts are explained
and several tables are shown in brief.
```

File: newbib.tex

```
\specialchapt{BIBLIOGRAPHY}
\interlinepenalty=300
\begin{singlespace}
\begin{hangpar}

Bruner, J. (1960).
{\em The process of education}.
New York: Random House.
\filbreak

Papert, Seymour. (1980).
{\em Mindstorms: Children, computers,
and powerful ideas}. New York:
Basic Books.
\end{hangpar}
\end{singlespace}
```

Notes: Note the use of the \\ for a double degree. Also note the use of the ';' in `\codepts` and `\comajors` and the way `\mprofs` is used.

2.6 thesisintmaj

Doctoral Dissertation with an Interdepartmental program

File: thesisintmaj.tex

```
\documentclass{report}
\usepackage{isuthesis}
\includeonly{titletocinterdm}
\begin{document}
\include{titletocinterdm}
\newpage
\pagenumbering{arabic}
\include{chapter1}
\include{chapter2}
\include{chapter3}
\include{chapter4}
\include{chapter5}
\include{appendix1}
\include{appendix2}
\include{newbib}
\end{document}
```

File: titletocinterdm.tex

```
% Doctoral dissertation with
%  an interdepartmental major
\title{This is the title of a thesis
submitted to Iowa State University\\
Note that only the first letter of
the first word and proper names
are capitalized}
\author{Wilbur Terrance Johnson}
\degree{DOCTOR OF PHILOSOPHY}
\level{Doctoral}
\format{dissertation}
\dept{Zoology and Genetics}
\interdeptm
\major{Molecular, Cellular,
and Developmental Biology}
\mprof{Susan D. Ross}
\notice
\maketitle
\tableofcontents
\listoftables
\listoffigures
```

File: chapter1.tex

```
\chapter{OVERVIEW}

This is the opening paragraph
to my thesis which explains
in general terms the concepts
and hypothesis that will be used
in my thesis.

\section{Introduction}
Here initial concepts and conditions
are explained and several hypothesis
are mentioned in brief.
```

File: appendix1.tex

```
\appendixtitle
\appendix
\chapter{EXTRA TABLES AND FIGURES}
This is the opening paragraph to my
appendix which explains
the figures and tables that will
be displayed.
\section*{Initial Concepts}
Here initial concepts are explained
and several tables are shown in brief.
```

File: newbib.tex

```
\specialchapt{BIBLIOGRAPHY}
\interlinepenalty=300
\begin{singlespace}
\begin{hangpar}

Bruner, J. (1960).
{\em The process of education}.
New York: Random House.
\filbreak

Papert, Seymour. (1980).
{\em Mindstorms: Children, computers,
and powerful ideas}. New York:
Basic Books.
\end{hangpar}
\end{singlespace}
```

Notes: Note the location of the `\interdeptm` command which is just in front of `\major`.

2.7 thesisparts

Master's Thesis with Papers as Parts

File: thesisparts.tex

```
\documentclass{report}
\usepackage{isuthesis}
\alternatepart
%\includeonly{titletoc,part1}
\begin{document}
\include{titletoc}
\newpage
\pagenumbering{arabic}
\include{part1}
\include{chapter1}
\include{chapter2}
\include{part2}
\include{chapter3}
\include{chapter4}
\include{chapter5}
\include{appendix1}
\include{appendix2}
\include{newbib}
\end{document}
```

File: titletoc.tex

```
% Plain Master's thesis
\title{This is the title of a thesis
submitted to Iowa State University\\
Note that only the first letter of
the first word and proper names
are capitalized}
\author{Wilbur Terrance Johnson}
\degree{MASTER OF SCIENCE}
\dept{Human Development
and Family Studies}
\major{Human Development
and Family Studies
(Marriage and Family Therapy)}
\mprof{Susan D. Ross}
\notice
\maketitle
\tableofcontents
\listoftables
\listoffigures
```

File: part1.tex

```
\part{INTERESTING STUDY OF SITE \#1}
```

```
\specialchapt{INTRODUCTION}

Here is the introduction to the
study of this particular site.
The site contained much data
and required months of careful
analysis.
```

File: chapter1.tex

```
\chapter{OVERVIEW}

This is the opening paragraph
to my thesis which explains
in general terms the concepts
and hypothesis that will be used
in my thesis.

\section{Introduction}
Here initial concepts and conditions
are explained and several hypothesis
are mentioned in brief.
```

File: appendix1.tex

```
\appendixtitle
\appendix
\chapter{EXTRA TABLES AND FIGURES}
This is the opening paragraph to my
appendix which explains
the figures and tables that will
be displayed.
\section*{Initial Concepts}
Here initial concepts are explained
and several tables are shown in brief.
```

File: newbib.tex

```
\specialchapt{BIBLIOGRAPHY}
\interlinepenalty=300
\begin{singlespace}
\begin{hangpar}

Bruner, J. (1960).
{\em The process of education}.
New York: Random House.
\end{hangpar}
\end{singlespace}
```

Notes: Note the use of the `\part` command to create papers within the thesis and how the thesis is generally organized. This is an alternative to the standard thesis style.

2.8 thesispartsnochap

Master's Thesis with Papers as Parts fully numbered with no chapter numbering

File: thesispartsnochap.tex

```
\documentclass{report}
\usepackage{isuthesis}
\alternatenum
\nochap
%\includeonly{titletoc,part1}
\begin{document}
\include{titletoc}
\newpage
\pagenumbering{arabic}
\include{part1}
\reset
\include{chapter1}
\reset
\include{chapter2}
\include{part2}
\reset
\include{chapter3}
\reset
\include{chapter4}
\reset
\include{chapter5}
\include{appendix1}
\include{appendix2}
\include{newbib}
\end{document}
```

File: titletoc.tex

```
% Plain Master's thesis
\title{This is the title of a thesis
submitted to Iowa State University\\
Note that only the first letter of
the first word and proper names
are capitalized}
\author{Wilbur Terrance Johnson}
\degree{MASTER OF SCIENCE}
\dept{Human Development
and Family Studies}
\major{Human Development
and Family Studies
(Marriage and Family Therapy)}
\mprof{Susan D. Ross}
\notice
\maketitle
\tableofcontents
\listoftables
\listoffigures
```

File: part1.tex

```
\part{INTERESTING STUDY OF SITE \#1}

\specialchapt{INTRODUCTION}

Here is the introduction to the
study of this particular site.
The site contained much data
and required months of careful
analysis.
```

File: chapter1.tex

```
\chapter{OVERVIEW}

This is the opening paragraph
to my thesis which explains
in general terms the concepts
and hypothesis that will be used
in my thesis.

\section{Introduction}
Here initial concepts and conditions
are explained and several hypothesis
are mentioned in brief.
```

File: appendix1.tex

```
\appendixtitle
\appendix
\chapter{EXTRA TABLES AND FIGURES}
This is the opening paragraph to my
appendix which explains
the figures and tables that will
be displayed.
\section*{Initial Concepts}
Here initial concepts are explained
and several tables are shown in brief.
```

Notes: Note the use of the `\reset` command before every chapter and how the thesis is organized. This strange style seems to be quite popular as an alternate thesis style.

2.9 thesispartsnopart

Master's Thesis with Papers as Parts (alternative approach without numbering)

File: thesispartsnopart.tex

```
\documentclass{report}
\usepackage{isuthesis}
\alternatepart
%\includeonly{titletoc,part1}
\begin{document}
\include{titletoc}
\newpage
\pagenumbering{arabic}
\include{part1a}
\include{chapter1}
\include{chapter2}
\include{part2a}
\include{chapter3}
\include{chapter4}
\include{chapter5}
\include{appendix1}
\include{appendix2}
\include{newbib}
\end{document}
```

File: titletoc.tex

```
% Plain Master's thesis
\title{This is the title of a thesis
submitted to Iowa State University\\
Note that only the first letter of
the first word and proper names
are capitalized}
\author{Wilbur Terrance Johnson}
\degree{MASTER OF SCIENCE}
\dept{Human Development
and Family Studies}
\major{Human Development
and Family Studies
(Marriage and Family Therapy)}
\mprof{Susan D. Ross}
\notice
\maketitle
\tableofcontents
\listoftables
\listoffigures
```

File: part1a.tex

```
\specialpart{INTERESTING STUDY OF SITE \#1}

\specialchapter{INTRODUCTION}

Here is the introduction to the
study of this particular site.
The site contained much data
and required months of careful
analysis.
```

File: chapter1.tex

```
\chapter{OVERVIEW}

This is the opening paragraph
to my thesis which explains
in general terms the concepts
and hypothesis that will be used
in my thesis.

\section{Introduction}
Here initial concepts and conditions
are explained and several hypothesis
are mentioned in brief.
```

File: appendix1.tex

```
\appendixtitle
\appendix
\chapter{EXTRA TABLES AND FIGURES}
This is the opening paragraph to my
appendix which explains
the figures and tables that will
be displayed.
\section*{Initial Concepts}
Here initial concepts are explained
and several tables are shown in brief.
```

Notes: Note the use of `\alternatepart` and the use of `\specialpart` instead of `\part`. Strange and different.

2.10 thesispartsalt

Master's Thesis with Papers as Parts (alternative approach with numbering)

File: thesispartsalt.tex

```
\documentclass{report}
\usepackage{isuthesis}
\alternatenum
\nochap
%\includeonly{titletoc,part1}
\begin{document}
\include{titletoc}
\newpage
\pagenumbering{arabic}
\reset
\include{part1a}
\include{chapter1}
\include{chapter2}
\reset
\include{part2a}
\include{chapter3}
\include{chapter4}
\include{chapter5}
\include{appendix1}
\include{appendix2}
\include{newbib}
\end{document}
```

File: titletoc.tex

```
% Plain Master's thesis
\title{This is the title of a thesis
submitted to Iowa State University\\
Note that only the first letter of
the first word and proper names
are capitalized}
\author{Wilbur Terrance Johnson}
\degree{MASTER OF SCIENCE}
\dept{Human Development
and Family Studies}
\major{Human Development
and Family Studies
(Marriage and Family Therapy)}
\mprof{Susan D. Ross}
\notice
\maketitle
\tableofcontents
\listoftables
\listoffigures
```

File: part1a.tex

```
\specialpart{INTERESTING STUDY OF SITE \#1}

\specialchapter{INTRODUCTION}

Here is the introduction to the
study of this particular site.
The site contained much data
and required months of careful
analysis.
```

File: chapter1.tex

```
\chapter{OVERVIEW}

This is the opening paragraph
to my thesis which explains
in general terms the concepts
and hypothesis that will be used
in my thesis.

\section{Introduction}
Here initial concepts and conditions
are explained and several hypothesis
are mentioned in brief.
```

File: appendix1.tex

```
\appendixtitle
\appendix
\chapter{EXTRA TABLES AND FIGURES}
This is the opening paragraph to my
appendix which explains
the figures and tables that will
be displayed.
\section*{Initial Concepts}
Here initial concepts are explained
and several tables are shown in brief.
```

Notes: Note the use `\specialpart` instead of `\part` and the use of the `\reset` command but only at the start of a paper. Very strange and different but seemingly popular.

Chapter 3

Additional LaTeX 2_ε Commands used in a Thesis

The following chapter shows move advanced LaTeX commands and commands that are unique to isuthesis that are also useful in creating a thesis. Examples are drawn from the Exthesis directory which is currently located at: `/home/newtex/lib/texmf/tex/latex2e/isu/Exthesis/`.

3.1 Tables & tabular; Figures & graphics

Here is an annotated template for a simple table from **chapter3.tex**:

```
\begin{table}[h!tb] \centering    ⟹Begins & centers table.
\isucaption{This table shows      ⟹Caption for a table—
nothing}                          ⟹goes at start of table.
\label{nothing}                   ⟹Labels table for referencing.
                                  ⟹Blank line.
\vspace{2 in}                     ⟹Leaves 2 inches of blank space.
\end{table}                       ⟹Ends table.
```

Here is an annotated template for a more complex table from **chapter3.tex**:

```
\begin{table}[h!tb] \centering          ⟹Begins & centers table.
\setlength{\captionwidth}{3 in}         ⟹Restricts width to 3 in.
\isucaption{This table nothing much     ⟹Caption for a table—
but is an example of a complete table}  ⟹goes at start of table.
\label{nothingelse}                     ⟹Labels table for referencing.
\begin{tabular}{lcc}                    ⟹Starts tabular environment.
Element & Control & Experimental\\      ⟹The & skips to next element.
\\                                      ⟹Skips a line.
Moon Rings & 1.23 & 3.38 \\            ⟹\\ ends a tabular line.
Moon Tides & 2.26 & 3.12\\             ⟹More tabular.
Moon Walk & 3.33 & 9.29\\              ⟹Even more tabular.
\end{tabular}                           ⟹Ends tabular environment.
\end{table}                             ⟹Ends table.
```

Here is an annotated template for a simple figure from **chapter3.tex**:

```
\begin{figure}[h!tb]              ⟹Starts & centers figure.
                                  ⟹Blank line.
\includegraphics{dc5.ps}          ⟹Brings in graphic dc5.ps—
                                  ⟹postscript(.ps/.eps) graphics only.
\isucaption{This figure           ⟹Caption for a figure—
shows Durham Centre}              ⟹goes at end of a figure.
\label{moonglow}                  ⟹Labels figure for referencing.
\end{figure}                      ⟹Ends figure.
```

3.1.1 Notes

Figures and tables are floating items in LaTeX; that is, they appear as a single unit on the page and if they don't fit on the current page they must be "floated" to the next page. The positional placement items `[h!tb]`, which come in brackets following the start of a table or figure, direct LaTeX as to where this "floating" item should occur on the page:

h	- here	**t**	- top of next page
b	- bottom of next page	**p**	- on a page by itself

Positional placements items should be listed in order of preference. You can place a **!** after any positional placement item to tell LaTeX to "try harder" to use the placement item indicated. The default positional placement items are `[tbp]` which are good for creating a book but not as good for a thesis.

3.1.2 Options

The following options can be used with tables or figures:

\centering	⟹Centers table/figure between right and left margins—
	⟹must come after positional placement items.
\captionwidth	⟹Restricts caption width so that it fits better
	⟹over tables/figures that aren't full page width.
\label{name}	⟹Labels table/figure so can reference with `~\ref{name}`.
	⟹`\isucaption` must directly precede table/figure labels.

For instance, if you label a figure as `\label{bell}`; you can then reference that figure in your document by entering: ...as can be seen in Figure`~\ref{bell}`.

The `\clearpage` command starts a new page and clears out all "floating" tables and figures before continuing on with more text. It's useful to use if you get an error message about "LaTeX running out of memory".

Tabular environment

The tabular environment makes columns of items in LaTeX. At the start of a tabular environment (`\begin{tabular}`), you need to specify in braces the number of columns to create where each character you list is a new column:

l - left-justified **r** - right-justified **c** - centered

The following additional formatting options are also available:

| - vertical line **@{**text**}** - enters text (like `\hspace`) into each line.

Within the tabular environment (`Moon Rings & 1.23 & 3.38\\`) use a & to go from one column to the next and use \\ to end a row. The following additional options are also available:

\hline	⟹Draws a horizontal line the full table width.
\cline{n - m}	⟹Draws a horizontal line from column n to m.
\multicolumn{num}{col}{text}	⟹Combines *num* columns into a single column—
	⟹*col* contains a positional symbol like l, r or c.

\includegraphics

The isuthesis package uses the graphicx package which adds some additional options to the `\includegraphics` command:
\includegraphics[bb=*llx lly urx ury*,angle=*angle*, width=*h_length*,height=*v_length*, scale=*factor*,clip=*true/false*, draft=*true/false*]{*filename*}
where *llx, lly, urx, ury* contain the coordinates of the bounding box containing the part of the picture that is to be included. Complete information on `\includegraphics` is available via the references in Appendix **??**.

3.2 Mathematics

Mathematics is at the heart of what TEX and LATEX do best! Below are some examples of math modes that are available in LATEX. For more complete mathematical information, see the source books listed in Appendix **??** which are available for checkout from Reference and Supplies, 195 Durham Center.

3.2.1 *In-text* mathematics

Use $ ... $ or \(... \) to create mathemathematics within a line of text, like this: A^{43} by using $ to get into math mode and then another $ to exit math mode. While in math mode, you can use ^ to produce superscripts and _ to produce subscripts but if you have more than one character as a superscript or subscript then you have to enclose your superscript or subscript in braces {}. Here are some example:

`Variable $D^7$ shows`	$\Longrightarrow$Variable D^7 shows
`Here $Y_a$ relates`	$\Longrightarrow$Here Y_a relates
`This shows: $A^{43}$`	$\Longrightarrow$This shows: A^{43}
`Here $B_{150}$ is true.`	$\Longrightarrow$Here B_{150} is true.

3.2.2 *Display* mathematics

Use \[... \] to create mathematics that are set apart from your textual material. For instance, you can use \frac{num}{denom} to create a LATEX large fraction. So an *in-text* fraction, would look like this $\frac{43x}{1698}$ while a display math fraction would look like this:

$$\frac{43x}{1698}$$

Here are some more examples that use superscripts, subscripts, \frac, \sqrt (square root $\sqrt{42}$) and \ldots (ellipsis ...):

```
\[ \frac{A^{123} - 7}{T_5} \]
```
$$\Longrightarrow \quad \frac{A^{123} - 7}{T_5}$$

```
\[ \frac{1}{\sqrt{75}\ldots\sqrt{123}} \]
```
$$\Longrightarrow \quad \frac{1}{\sqrt{75}\ldots\sqrt{123}}$$

3.2.3 Mathematical symbols and fonts

There are a large variety of mathematical symbols available in math mode in TEX and LATEX. Listed here are just a few standard examples:

α	`\alpha`	β	`\beta`	γ	`\gamma`	θ	`\theta`
Σ	`\Sigma`	Φ	`\Phi`	Ω	`\Omega`	Ψ	`\Psi`
$\dagger$	`\dagger`	$\odot$	`\odot`	$\star$	`\star`	$\circ$	`\circ`
$\leq$	`\leq`	$\geq$	`\geq`	$\subset$	`\subset`	$\supset$	`\supset`

$\ldots$	\ldots	$\cdots$	\cdots	$\vdots$	\vdots	$\ddots$	\ddots
$\equiv$	\equiv	$\approx$	\approx	$\neq$	\neq	$\doteq$	\doteq
$\leftarrow$	\leftarrow	$\rightarrow$	\rightarrow	$\Leftarrow$	\Leftarrow	$\Rightarrow$	\Rightarrow
$\triangle$	\triangle	∞	\infty	$\backslash$	\backslash	$\exists$	\exists
$\sum$	\sum	$\int$	\int	$\prod$	\prod	$\coprod$	\coprod
$\bigodot$	\bigodot	$\bigotimes$	\bigotimes	$\bigcup$	\bigcup	$\bigsqcup$	\bigsqcup

You can put a slash through a symbol by putting a `\not` before it. Some additional mathematical symbols (like $\rightsquigarrow$ and $\bowtie$) are available by using the *latexsym* package. See any standard LaTeX book (like **?** or **?**) for a complete list of mathematical symbols available in LaTeX. LaTeX provides the following commands for changing type styles in math mode:

italic: $3i\pi$	`\mathit{3i\pi}`	roman: $3i\pi$	`\mathrm{3i\pi}`
sans serif: $3i\pi$	`\mathsf{3i\pi}`	typewriter: $3i\pi$	`\mathtt{3i\pi}`
bold: $\mathbf{3i\pi}$	`\mathbf{3i\pi}`	$\mathbf{\Psi}$	`\boldmath$\Psi$\unboldmath`

3.2.4 Other mathematical examples

Here are a few more examples of additional math modes in LaTeX:

```
\[ \lim_{n \rightarrow \infty} x = 1 \]
```
$$\lim_{n \rightarrow \infty} x = 1$$

```
\[\overbrace{w+\underbrace{x+y}_b+z}^a\]
```
$$\overbrace{w+\underbrace{x+y}_{b}+z}^{a}$$

```
\begin{equation}
 x \ll y_{2} + \cdots + y_{n}
\end{equation}
```
$$x \ll y_2 + \cdots + y_n \tag{3.1}$$

```
\[ \begin{array}{cll}
  a+b+c & xy & x-y \\
    d+e & yz & y-z \\
      f & xz & z-x
    \end{array} \]
```
$$\begin{array}{cll} a+b+c & xy & x-y \\ d+e & yz & y-z \\ f & xz & z-x \end{array}$$

```
\begin{eqnarray}
 x & = & 127y \\
 y & > & a+b+\cdots+m+\nonumber\\
   &   & n+o+p+q
\end{eqnarray}
```
$$\begin{aligned} x &= 127y && (3.2)\\ y &> a+b+\cdots+m+ \\ &\quad n+o+p+q && (3.3) \end{aligned}$$

Use `eqnarray*` instead of `eqnarray` to produce an equation array without equation numbers. `\usepackage{subeqn}` can also be used in the preamble of your document to control subequation numbering after which you can then use: `\subequations` to start subequation numbering, `\newsubequation` to start a new set of subequations or `\nosubequations` to turn off subequation numbering; at the start of a subequation line.

3.3 Other Bibliographic Styles

Besides using the hangpar environment shown earlier in Section **??**, there are other more formal bibliographic styles available in LaTeX like: thebibliography environment that uses bibitem(s), BIBTEX and NATBIB. Be forewarned, many departments are very particular about the kinds of bibliography that they will accept so always check with your department or research advisor before committing to a particular type of bibliography.

Here is an annotated template for a bibitem style bibliography edited from the file **thebib.tex**:

```
\renewcommand{\bibname}{\centerline{BIBLIOGRAPHY}}
                                        ⟹Changes biblio. titling.
\unappendixtitle                        ⟹Resets chapter titling.
\begin{thebibliography}{99}             ⟹Starts bibliography.
\addcontentsline{toc}{chapter}{BIBLIOGRAPHY}
                                        ⟹Adds biblio. to TOC.
                                        ⟹Blank line- new citation.
\bibitem{gn:struss} Struss, Joseph A. (1992).   ⟹\bibitem labels citation:
{\em The Big Wide World and Welcome to It}.     ⟹use \cite{gn:struss} to
Racene, WS: Permanent Ink Press.                ⟹reference citation.
\end{thebibliography}                   ⟹Ends bibliography.
```

Here is an annotated template edited from the thesis file (**thesisbibtex.tex**) that is going to use a BIBTEX bibliography:

```
\bibliographystyle{isuplain}  ⟹Choose style of bibliography.
\include{titletocmas}         ⟹Style choice goes at start of thesis.
⋮                             ⟹The rest of this goes after the appendices.
\renewcommand{\bibname}{\centerline{BIBLIOGRAPHY}}
                              ⟹Changes biblio. titling.
\unappendixtitle              ⟹Resets chapter titling.
\addcontentsline{toc}{chapter}{BIBLIOGRAPHY}
                              ⟹Adds biblio. to TOC.
\bibliography{mybib}          ⟹Gets biblio. from mybib.bib.
```

Here is an annotated template for a BIBTEX style bibliography edited from the file **mybib.bib**:

```
@book{gn:struss,                    ⟹Book: use \cite{gn:struss} to reference.
AUTHOR = "Joseph A. Struss",        ⟹Lists author.
TITLE = "The Big Wide World         ⟹Lists title.
and Welcome to It",                 ⟹Can enclose entry with " " or {  }.
PUBLISHER = Permanent Ink Press,    ⟹Lists publisher.
ADDRESS = {Racene, WS},             ⟹Lists address of publisher.
YEAR = 1992}                        ⟹Lists year.
```

NATBIB is just a variation of BIBTEX that doesn't use a label for citations in the bibliography. To use NATBIB, use the same structural design as BIBTEX but add **usepackage{natbib}** to the preamble of your document.

3.3.1 Notes

With each citation, you also enter a *key* for the citation that is also used with the `\cite` command so that LaTeX knows which reference you are citing. The keyword does not appear in the text of the document and is only there to link the `\cite` to the bibliographic citation. This keyword can be made up of any combination of letters, digits or special symbols except commas.

The thebibliography environment

On the `\begin{thebibliography}{99}` line, the '99' is a place holder for the number of characters in the bibliographic label. By default, the bibliographic label is a number so using '99' you could have up to 99 bibliographic citations.

If you want to use a label rather than a number for each citation, add the [label] option to the `\bibitem` command. So if I wanted a citation labeled **Knight**, my bibitem command would begin with: `\bibitem[Knight]{key}`.

The BIBTEX bibliography

There are currently eight standard BIBTEX bibliographic styles to choose from in the newtex locker: abbrv, acm, alpha, apalike, ieeetr, plain, siam and unsrt. A special isu version of each of these styles is also available by adding isu in front of the standard BIBTEX style name (for instance, acm $\Longrightarrow$isuacm).

To use BIBTEX, `latex` your document twice and then enter:

% `bibtex` thesis (bibtex the master file)

after which `latex` your document one more time. BIBTEX will find the `\cite` commands in your document and from them create a bibliography.

BIBTEX is unique in that it uses a bibliographic database to keep track of individual citations. You must make an entry for each citation that you might be interested in using and BIBTEX puts into your bibliography only those citations that were actually used in the document. This makes BIBTEX very useful if you are going to be using your citations more than once as the same BIBTEX file can be used over and over again. For more information on BIBTEX, see the reference books listed in Appendix **??** or look in **?**.

The NATBIB bibliography

Both thebibliography environment and BIBTEX use a labeled scheme to reference bibliographic citations. Many areas and departments find this type of bibliography to be unacceptable. NATBIB is a variation of BIBTEX that produces a BIBTEX-style bibliography without citations being labeled. To use NATBIB, produce a BIBTEX style bibliography but add `\usepackage{natbib}` to the preamble of your document. There is complete information regarding the NATBIB variation of BIBTEX in the `/home/newtex/news/` directory and an example thesis that uses NATBIB entitled thesisnatbib.tex is in the Exthesis directory.

3.4 Tricks of the Trade

3.4.1 Lining up on a decimal point

Since LaTeX uses proportional pitched fonts with different sized letters/numbers, it is normally difficult to align a group of numbers on a decimal point. One way to do this is to use the typewriter font which is a fixed pitch font while another way is to use the exact same number of letters on each side of the decimal point. A more satisfactory way to do this in a tabular environment is to split a number across two columns with a r@.l and then use the `\multicolumn` command to span columns in the header. For example:

```
\begin{tabular}{lr@{.}lr@{.}l}
Group & \multicolumn{2}{c}{Reading}
& \multicolumn{2}{c}{Writing}\\
Fifth Grade & 3&32 & 76&52 \\
Sixth Grade & 219&927 & 114&9542\\
\end{tabular}
```

$\Longrightarrow$

Group	Reading	Writing
Fifth Grade	3.32	76.52
Sixth Grade	219.927	114.9542

You can also use `@{\extracolsep{\fill}}` as a tabular formatting option to fill up blank areas in fixed width tables.

3.4.2 Rotating a table or figure

If you add `\usepackage{rotating}` to the preamble of your thesis, you can then use the following additional document environments:
`\begin{sidewaystable}`...`\end{sidewaystable}`
`\begin{sidewaysfigure}`...`\end{sidewaysfigure}`
The sidewaystable and sidewaysfigure environments are used just like the table and figure environments (without positional placement items) except that they produce fully rotated tables and figures.

3.4.3 Continuing a table or figure

LaTeX does not allow tables or figures to be over one page in length. To create a two page table/figure: end your current table at the bottom of the first page and then on the next page start a new table using `\isucontinuecaption` instead of `\isucaption`. The `isucontinuecaption` will decrease the current table/figure number and mark it as a continuation of the last table/figure.

3.4.4 Verbatim environment

The verbatim environment in LaTeX produces text exactly the way that it is typed and formatted. Verbatim is useful for putting in text that you don't want LaTeX to process. Use \begin{verbatim} to begin a verbatim environment and \end{verbatim} to end a verbatim environment You can also use: `\verb* verbatim text*` to produce a small verbatim environment on a line where * can be any character not used in the verbatim text. `\usepackage{verbatim}` also defines a `\verbatiminput{file}` command for long text entry.

Appendix A

Basic LaTeX 2ε Commands on Project Vincent

To use LaTeX 2ε on Project Vincent, you will need to use the following set of commands:

% **add newtex** — needs to be entered once during a session to access the LaTeX 2ε locker and make LaTeX 2ε commands available for your use.

% **latex** filename**.tex** — compiles a LaTeX 2ε file, checks for correct syntax and if there are no errors produces a filename**.dvi** file.

If you get a ? then you have an error in your file. Enter **X** to exit the compiler, correct your error and then recompile your filename**.tex** all over again.

% **xdvi** filename**.dvi** — allows you to view the .dvi output from your LaTeX 2ε file. This command will only work in an X-Windows environment like a Project Vincent workstation.

% **dvips** filename**.dvi** — creates a filename.ps file out of your filename.dvi file which you can then print with the **lpr** command.

% **ispell -t** filename**.tex** — will spell check a LaTeX document and ignore LaTeX commands and symbols. Once you are inside of ispell enter a ? for additional commands and information.

To view postscript(.ps/.eps) graphics in your document that you can't view with xdvi, create a .ps file as shown above and enter:

% **add ghost** — needs to be entered once during a session to access the ghostscript locker and make ghostscript commands available for your use.

% **gs** filename**.ps** — allows you to view postscript output (including graphics) from your LaTeX 2ε file.

Appendix B

Converting a LaTeX 2.09 isuthes thesis to the LaTeX 2_ε isuthesis package

Listed below are the steps you need to convert your LaTeX 2.09 isuthes style document into a LaTeX 2_ε isuthesis package document.

Required Changes:

1. Change the `\documentstyle{isuthes}` line to:
   `\documentclass{report}`
   `\usepackage{isuthesis}`

2. In the information for your title page (before \maketitle) add:
   `\mprof{Major Professor's Name}`
   `\dept{Name of your Department}`
   `\level{Doctoral}` =only needed for a Doctoral Dissertation=
   `\format{dissertation}` =only needed for a Doctoral Dissertation=

3. In the information for your title page (before `\maketitle`) lose:
   `\supervisor{...}`
   `\begin{abstract} ... \end{abstract}`
   Note: Abstracts are now handled in a completely different manner. For more information, see the aareadme.dat file and the other example files in the example thesis directory (Exthesis) of the newtex locker.

4. Change `$$ ... $$` (`$$` display math mode) in your thesis to `\[ ... \]`.

5. Change the `\section` and `\subsection` commands in your appendix to `\section*` and `\subsection*` and put `\appendixtitle` in front of the `\appendix` command.

6. Move your bibliography to after your final appendix.

Optional Changes:

1. The new isuthesis package defaults to a LaTeX standard ten- point type font. You can optionally use an eleven-point type font (the old isuthes standard) or a twelve-point type font by adding an optional argument to the documentclass command:
   `\documentclass[11pt]{report}`
   `\documentclass[12pt]{report}`

2. LaTeX 2$_\varepsilon$ now has a command to easily insert postscript graphics into your thesis that automatically creates the appropriate amount of `\vspace` on the page. So you can remove your:
   `\vspace{...}`
   `\special{psfile=filename.ps}`
   lines and replace them with:
   `\includegraphics{filename.ps}`

3. Tables and figures that use the loc arguments h, t, b, or p for table or figure placement such as: `\begin{figure}[htb]` can now use the optional ! argument which directs LaTeX to try harder to place the figure or table at the earliest loc suggested, such as: `\begin{figure}[h!tb]`

4. In the document preamble, after `\usepackage{isuthesis}` and before `\begin{document}`, you can use the following two commands to alter sectional numbering:
   `\alternate` - sectional numbering down to subsection
   `\alternatenum` - sectional numbering at all levels including the newly allowed `\paragraph` and `\subparagraph` sectional levels below `\subsubsection`.

5. You can now insert full page rotated tables and figures directly into your thesis. Just use: `\begin{sidewaystable}` or `\begin{sidewaysfigure}` in place of `\begin{figure}` or `\begin{table}`. There are examples of this in the example thesis directory in the newtex locker:
   `/home/newtex/lib/texmf/tex/latex2e/isu/Exthesis/`

6. There are many font style and size changes in LaTeX 2$_\varepsilon$ but don't let this worry you. All of the old LaTeX 2.09 type size and style commands are aliased in LaTeX 2$_\varepsilon$ so they will all continue to work. If you want to change to the new LaTeX 2$_\varepsilon$ style font commands, see my LaTeX article in the April 1995 edition of the Computation Center Newsletter.

Further information on changes from LaTeX 2.09 to LaTeX 2$_\varepsilon$ are available in Appendix D of the "LaTeX: User's Guide and Reference Manual" (**?**), in "The LaTeX Companion" (**?**) and in Kopka and Daly's "A Guide to LaTeX 2$_\varepsilon$" (**?**).

Appendix C

Current files in the Exthesis directory

thesism.tex	- Plain Masters thesis
thesisabs.tex	- Plain Masters thesis with an abstract
thesisdr.tex	- Plain Doctoral thesis
thesisdrabs.tex	- Abstract for a Doctoral thesis (run separately)
thesisintprog.tex	- Interdepartmental program thesis
thesisintmaj.tex	- Interdepartmental major thesis
thesismprofs.tex	- a thesis with two major professors
thesisco.tex	- a codepts/comajors/two major professors thesis
thesismulti.tex	- a thesis with everything
thesisgraphics.tex	- a thesis with a lot of graphics
thesisminor.tex	- a plain Masters thesis with a minor
thesisall.tex	- a dissertation with just about everything including a minor
thesisbibtex.tex	- a plain Masters thesis with BIBTEX bibliography
thesisnatbib.tex	- a plain Masters thesis with NATBIB BIBTEX biblio.
thesiscont.tex	- another Masters thesis with a continuing table
thesisleft.tex	- a Masters thesis with left, aligned tables/figures
thesisbibitem.tex	- a plain Masters thesis with a bibitem bibliography
thesisoneapp.tex	- a single appendix Masters thesis
thesismtitle.tex	- a plain Masters thesis with formal chapter and appendix titles
thesisfchap.tex	- plain Masters thesis with single appendix(fake chapter)
thesisparts.tex	- Thesis with papers as Parts
thesispartsnum.tex	- Thesis with papers as Parts, fully numbered
thesispartsnochap.tex	- Thesis with papers as Parts, numbered, no chapter numbering
thesispartsalt.tex	- Alternative Parts without \part with numbering below chapter
thesispartsnopart.tex	- Alternative Parts without \part without numbering
thesisnoparts.tex	- Thesis with papers as Chapters
thesisnopartsnum.tex	- Thesis with papers as Chapters, fully numbered
thesisnopartsnochap.tex	- Thesis with papers as Chapters, fully numbered except chapter level