GUIDELINES FOR RESEARCH PAPERS, THESES, AND DISSERTATIONS

DEPARTMENT OF MATHEMATICS, SIUC (7/2006)

The following guidelines are based on the *siugrad50.cls* file provided by the SIUC Mathematics Department for typing mathematics research papers, theses, and dissertations in LaTeX. A sample paper using this style file has been approved by the Graduate School. Examples of this sample paper are discussed below. The template and documentation sample files may be accessed from the Math Department web page through the links: **Graduate Program**, **Thesis Template and Documentation**. The address is: http://www.math.siu.edu/theses/thesesx.shtml.

Once you download the template files you can view the sample paper to see how the commands in the .tex files are translated. The template files are commented throughout to help you with unfamiliar commands.

Before starting your paper, check the Graduate School Guidelines on Theses and Dissertations (http://www.siu.edu/gradschl/dtrguide.htm). Their pamphlet may also be picked up at the Graduate School. The instructions in the Graduate School guidelines describe aspects of a thesis not found in the Department Guidelines.

The Graduate School guidelines determine:	The department style determines:
1. organization of material	1. page number placement within the body of the paper
2. general information about tables and figures	2. style of headings and subheadings
3. maps, pictures, appendices, and color	3. reference citations
4. paper, printing	4. use of bold and italics
5. margins, indentations, pagination	5. style used for tables and figures
6. examples of title page, abstract, vita	

TEMPLATE FILES AND EXAMPLE FILES

You may FTP the thesis template file down from the server and store it on your own disk – (ftp://www.math.siu.edu/pub/TexTemplates/template06.zip) or download it from http://www.math.siu.edu/theses/thesesx.shtml. This is a compressed file. WinZip or a similar program for uncompressing .zip files should start up when you try to open the file. Then you can expand (or extract) the files into your own directory. Now you are ready to copy or modify the files to use for your own paper. Thesis.tex is the main **driver** file and calls the other files with an \input statement. As you write your paper you may not want to include all the files when typesetting. You can comment out the \input statements for those files you don't want to run until later by putting a % to the left of any text on that line (anything that follows a % is ignored by LaTeX).

Backups

Be sure to periodically backup your files on 2 separate disks kept in different locations.

ORGANIZATION AND PRESENTATION

Page Numbers

The page numbers will be centered between the one and one-half inch margin on the left and the one inch margin on the right, 1/2 inch up from the bottom edge of the paper. The pages preceding the text should be numbered in small roman numerals. There is no number on the Cover page, Copyright page, Approval page. The Appendix slip sheet is not numbered and not counted.

Abstract – (Optional for Research Papers)

This page number must be done in roman numerals, at bottom of page, centered between margins.

The abstract (optional in research papers) should present information and results in capsule form and should be brief and objective, containing the content and conclusions of the paper. The topic sentence should give the overall scope and should be followed by emphasis on new information. Omit references, criticisms, drawings, and diagrams. Precisely define the contribution at the outset and present it clearly in the fewest words possible (but avoid jargon), so that the reader may get a maximum of facts and ideas in a minimum of time. State the purpose, give a minimum of background, concisely present the data that led to the conclusions, clearly differentiate fact and inference, and present justifiable conclusions and, perhaps, further implications of the conclusions.

Fonts and Spacing

A consistent font should be used for text (normally, 10–12 point roman) and all headings. The Graduate School requires double spacing throughout the paper, including the references.

Titles, Sections, Subsections

Chapter Titles: These are typed leaving a 1 inch margin at the top of paper, double spaced, centered, bold, and ALL CAPS. Three blank lines precede the next line of text. (Abstract, Table of Contents, etc. are placed as chapter titles.)

Sections: Left justified, bold and ALL CAPS in text size type. Two blank lines precede heading and one blank line follows it. If using sections, section numbering is required.

Subsections: Left justified, bold, and first letters of words capitalized. Two blank lines precede heading and one blank line follows it. If using subsections, subsection numbering is required.

Table of Contents, List of Tables, List of Figures

These pages should be double spaced. Only titles are bold. No extra spacing between chapters.

Theorems, Corollaries, Lemmas, Propositions

Theorem, Corollary, Lemma, or Proposition is printed in boldface type, left justified, number followed by a period, and the text is printed in italic. For example:

Proposition 1.1.1. *Let $S_1, \ldots, S_m$ be the components of a J-holomorphic cusp-curve S and suppose that each component S_i is (a multiple covering of) a regular curve and that Assumption (1.4a) is satisfied ...*

Remarks and Definitions

These titles are bolded, left justified, unnumbered, and followed by a period. The text is the normal text font.

Proofs

Sometimes a Theorem, Corollary, or Proposition will be supported by a demonstration or a proof. The title is left justified and italicized followed by a period and the text is the normal text font. Formatted like this:

Proof. If $x + y = z$, then $y = z - x$. □

Usually at the end of proofs there is a box placed at the right margin, as seen above.

Mathematical Expressions

Mathematical expressions and equations in text shall be written in "math italics" in accordance with TeX style (letters of the alphabet are italicized, numbers are not): the displayed equations may be numbered by either a right or left tag (equation number in parentheses, set off from the main text, and consistent throughout the document).

$$\begin{aligned} \hat{f}(v) &= \int_{-k/2}^{k/2} e^{-iuv} f(u)\, du = \int_{-k/2}^{k/2} e^{-iuv} F_k'(u)\, du \\ &= e^{-ikv/2} f_k\left(\frac{k}{2}\right) + (iv)\hat{f}_k(v) \end{aligned} \tag{1.2}$$

Figures And Tables

Figure caption labels begin with the word "Figure" and the number followed by a period. The caption text (below figure) is any descriptive text, or none that may be desired. For example

Figure 10.1. Example of a figure caption.

Table titles are centered below the table and single spaced if on more than one line. The format of the table is dependent upon the mathematical standard for the display of the pertinent material. For example:

k	n_0	h	k	n_0	h
2	5	3.2156	4	15	3.3424
	10	2.9483		20	3.3270

Table 1.1. Value of h satisfying equation (3.2)

Tables and figures are placed where they belong in the paper and NO notation is placed in the text as Table 1 here.

References (Bibliography)

All references mentioned in the text, figures, captions, tables, and appendices must be listed in the References section. AMS and SIAM journal publication style show citations within the text as [1]. The References page will be numbered in alphabetical order; double spaced; the name of journal articles and publications will be italicized; volume numbers will be boldfaced. For example:

REFERENCES

1. Huang, X. and Krantz, S.G., *On a problem of Moser*, Duke Math. J. **78** (1995), 213–228.

2. Macdonald, I.G., *Symmetric Functions and Hall Polynomials*, Second edition, Clarendon, Oxford, 1995.

3. K.M. Rasulov, Dokl. Akad. Nauk SSSR **252** (1980), 1059–1063; English transl. in Soviet Math. Dokl. **21** (1980).

Spacing

Be sure to be consistent in your spacing around headings, math equations, tables, figures, etc.

Suggested Resource Books

Grammar, Spelling, and Usage

The Elements of Grammar, by Margaret Shertzer, Macmillan, 1986.

Merriam-Webster's Collegiate Dictionary, 10th edition, 1993.

Mathematical Usage and Practice

LaTeX, by Leslie Lamport, Addison-Wesley Publ. Co., Inc., 1986.

Math Into LaTeX: An Introduction to LaTeX and AMS-LaTeX, by George Grtzer, Birkhuser Boston, 1996.

The LaTeX Companion, by Goosens, Mittlebach, and Samarin, Addison-Wesley, 1994.

AMS, ASA, SIAM journal publications.

Illustrations

All illustrations, whether line drawings or photographs, are termed figures. All lettering on illustrations must be drafted or laser printed, not typed or handwritten. Use graphic scales on illustrations; verbal scales (e.g., "x200") can be made meaningless by reduction of an illustration for printing. Calibrate graphic scales in metric units. Plan all type sizes large enough so that the smallest letters will be at least 1.5 mm tall after reduction to publication size. For review purposes, copies of illustrations must be legible and relatively easy to read, and any photographs must be direct prints. A consistent font should be used on all figures, but this font does not necessarily have to be the same as the font used for the text. See Graduate School Guidelines for further instructions.

Footnotes

Avoid footnotes and parenthetical statements, if possible. Exceptions as per Graduate School Guidelines.

Style Considerations

Authors of theses and dissertations are responsible for providing manuscripts in which approved mathematical and other terminology is used correctly and which have no grammar or spelling errors. Authors must check their manuscripts for accuracy and consistency in use of capitalization, spelling, abbreviations, and dates.

Template Files

siugrad50.cls	Class file that defines commands according to approved guidelines. Use [nochap] option if there are no chapters. Changes to this file are not recommended.

Each of the sample files below were used to create the sample paper posted on the SIUC Math Dept. web page. There are samples of formatting in each file that you can use for doing your paper, just delete the parts you don't want and add your own text.

Thesis.tex	Main driver file that calls each succeeding file.
Title.tex	Sample Title page This is where you indicate if your paper is a Research Paper, Thesis, or Dissertation.
Copyright.tex	Sample Copyright page (if used)
Approval.tex	Sample Approval page (Required)
Abstract.tex	Sample Abstract (if used)
Dedication	Sample Dedication page (if used)
Acknow.tex	Sample Acknowledgements (if used)
Preface.tex	Preface/Foreword (if used)
Intro.tex	Sample Introduction (if used)
ch1.tex	Sample Chapter 1
ch2.tex	Sample Chapter 2. Uses \includegraphics command (graphicx package), eg., .ps, .eps, .bmp
ch2-fig1.ps	Sample graphics file
ch2-fig2.ps	Sample graphic which needs to be rotated in the paper.
ps-defs.tex	Macro file with definitions for side-by-side graphics in a figure
ch3.tex	Sample file uses definitions in ps-defs.tex. Examples of a data file format using Verbatim command, rotated matrix, equation numbering options.
ch3-circle.ps	Sample figure Chapter 3
ch3-square.ps	Sample figure Chapter 3
ch3-triangle.ps	Sample figure Chapter 3
Biblio.tex	Sample bibliography file
Appendix.tex	Appendix Slip Sheet Copy the Intro.tex sample file for an Appendix (change title)
Vita.tex	Sample vita file

Good luck with your paper.