**GEOG 441/442 Senior Thesis Formatting Guidelines**

### THESIS STRUCTURE

The thesis should be written with the following elements in the following order: title page, table of contents, list of tables, list of figures, abstract with 3-5 keywords, main text, references, and appendices (if needed). All tables and figures should be embedded in the main text file after the paragraph in which they are first referenced in the text. The following headings detail the typical sections included in a thesis document, although some deviations from this are acceptable in consultation with your advisor.

**Abstract**

The abstract should consist of one or two paragraphs that present to the reader a succinct statement concerning the nature of the topic that is being investigated. The abstract should also summarize the methodology and results. Ideally, it should be no more than 250 words and include 3-5 keywords relevant to the research separately at the end.

**Introduction**

The introduction presents the reader with an overview of the research problem. The introduction should contain information concerning the importance of the research and document existing related research that establishes the proposed research within a wider framework (a literature review). At the end of this section the research question and/or hypothesis should be presented.

**Study Area**

Provide some description of your proposed study area in a paragraph or two. The general and specific content material of this section will depend on the topic being studied.

**Data and Methods**

All senior theses will require some kind of data collection and analysis in order to answer the research question stated in the introduction. Whether the data involved are primary or secondary in nature, this section should provide a description and justification of its collection and usage, and if secondary, the source(s) involved (with citations). The methods will describe what you will do with the data in order to answer the research question, essentially what procedures (spatial, statistical, qualitative analysis etc) will be employed when analyzing the data. Data and methods are often combined in one section but may be discussed in separate sections.

**Results**

The information from which conclusions are to be drawn is presented in this section. Emphasis should be placed on the presentation and interpretation/discussion of the results.

**Conclusion**

The wider implications and meanings of the results are presented in this section as is the place of these findings among those of other researchers of the topic. New information is not presented in this section. The conclusion may also contain some suggestions for further research based upon the findings of the study.

**References**

Every reference cited in the text must be included in the reference list and vice versa.

### GENERAL DOCUMENT FORMATTING

**Opening Pages Formatting**

The opening pages refer to the title page, table of contents, list of tables and list of figures. All text on the title page should be centered. The remaining opening pages should just have the title centered. See the appendix at the end of this document for sample formatting of these opening pages.

**Font**

The standard document font is 12-point Times New Roman. This font and font size should be used throughout the entire text and in tables except where noted.

**Margins**

Use 1-inch margins throughout the document. All figures and tables must fit within these margins, including their captions.

**Tab Settings and Text Alignment**

Use an indent at the start of a new paragraph. An indent of 0.25 or 0.5 inches is recommended and should be consistent throughout the thesis. All text should be aligned to the left margin except where indicated.

**Spacing**

The text of the thesis document should be double-spaced with the following exceptions, which use single spacing or a combination of single and double spacing:

* Title page, Table of Contents, List of Figures, List of Tables (see appendix for examples)
* Captions of tables and figures
* Entries in the reference list

**Headings**

No more than two heading levels should be used throughout the document. All primary section headings beginning with the Abstract must be upper case and bolded (e.g. **TITLE**); if secondary headings are required, they must be title case and bolded (e.g. **Title**). There should be a double space before and after all primary and secondary headings.

**Pagination**

The thesis must include page numbers at the bottom center of each page. Use standard numbering (e.g. 1, 2, 3) throughout the document.

**Equations**

Equations should be separated from the main body of the text by double-spacing and numbered. Symbols in the equation should be defined and described in the text. Use the insert equation function if using Word when possible.

  (1)

**Units of Measurement**

English or metric units may be used, although their use must be consistent throughout the thesis. Please consult with your advisor as to their preferred system.

**FIGURES AND TABLES**

Figures include all illustrative materials e.g. maps, graphs and photographs. Tables should be used to convey any data in tabular format.

**Size**

Figures and tables, including their captions, must fit within the 1-inch margins specified. Every effort must be made to place figures and tables in portrait format where possible. Large tables may appear on multiple pages with captions on each page. All figures and tables should be centered on the page, while captions remain aligned to the left margin.

**Captions**

Captions include the word ‘Figure’ or ‘Table’, the figure or table number, followed by descriptive text. All captions must appear directly beneath the figure/table using single spacing. For example:

Figure 1. Change in non-work travel between 1990 and 2000.

If the figure or table is taken from an existing document, the reference must be cited at the end of the descriptive text and listed in the reference list (if the figure has been modified from the original, reference as ‘adapted from’ and then the reference):

Figure 1. Change in non-work travel between 1990 and 2000 (Jones 2010).

All figure and table captions should match their description in the corresponding list of tables and list of figures in the opening pages of the thesis.

**Positioning**

All figures and tables should be referenced in the text (e.g. ‘The relationship between air temperature and solar radiation is presented in Figure 12’ or, ‘The observed flow rates are found in Table 5.’). The first reference to a figure or table should always be made *prior* to the placement of the corresponding figure or table. In other words, don’t put a figure or table in your thesis until after it has first been referred to in the text.

**Maps**

When creating your own maps, use appropriate software (e.g. ArcGIS or equivalent). While the content and information conveyed by maps can vary widely, each should have an appropriate scale, north arrow and legend that allows readers to easily understand what the map is showing. Maps may be in color or grayscale based on the information they convey. Do not include titles within maps, instead provide a figure caption underneath as previously described. **Make sure you consult with your advisor when creating maps to ensure their suitability and completeness.**

**Graphs**

All graphs should have appropriate labels included on their axes along with units of measurement.

**Table Formatting**

Where possible all tables should be editable, unless they are directly from a secondary source in which case an image of a table is permitted (however it should still be listed as a table, not a figure). Tables should be formatted in a manner that they clearly convey their information and be consistent in their format throughout the thesis. Column headings should bolded and include units of measurement where necessary. In cases where larger tables are required, it is permissible to use a smaller font, although do not use anything less than size 8. An example of a basic table format is provided below.

|  |  |  |
| --- | --- | --- |
| **Land Cover** | **Area (sq. km)** | **Area (%)** |
| Forest | 132 | 54 |
| Grass | 98 | 40 |
| Urban | 16 | 6 |
| Total | 246 | 100 |

Table 1. Land cover and areas for study area location.

**REFERENCING**

Any information that is derived from an external source must be cited within the text of your thesis (in-text citations) **and** in the reference list section at the end of the document. This can include author names and agencies/organizations when a specific person(s) is not identified. References should be cited for direct quotations, paraphrasing, specific facts (including data and equations) and general ideas or conclusions taken from a source. If any illustrative materials (e.g. maps, figures, etc.) are taken from a published source, this source must also be referenced. Citations may refer to a range of source material types including books, book chapters, journal articles, theses and dissertations, government reports, newspaper articles, personal communications, and web sites.

**Referencing Style**

All theses must follow the [Annals of the American Association of Geographers (AAG) referencing style](https://www.tandf.co.uk/journals/authors/style/reference/tf_USChicagoB.pdf). The link provides examples of in-text and reference list citations. Please consult this as you add in-text citations and build your reference list. You should also consult your advisor if you think you have examples of other kinds of sources for referencing. You are also encouraged to use [EndNote](https://endnote.com/style_download/american-association-of-geographers-style-guide-aag/) when putting your reference list together at the end of the thesis.

**Appendix: Examples of title page, table of contents, list of tables and list of figures.**

**Recent Changes in the Distribution and Frequency of Tornadoes in the**

**Central United States: 2000-2020**

By

John Smith

A Thesis

Submitted to the Department of Geographic and Environmental Sciences

University of Louisville

Louisville, KY

April 2021

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