

## Term Paper

Write an expository paper on a mathematical topic. The text must be at least 2000 words long and typed (approximately 8 pages (but no more than 10 pages) if double spaced. Note that figures tables and graphs are not counted as the volume and should be contained in an appendix.)

- The paper should be directed to your peers unfamiliar with the topic.
- The paper should not be written like a lecture or a conversation. Make it expository.
- Do not plagiarize!
- The paper should include not only some basic material related to your topic: you should talk on more advance applications. *The point is to use what you've learned in class.*
- The paper need not contain full proofs, but *should have significant mathematical content* (e.g. an outline of the proof, its steps, and techniques used, examples and counter-examples for definitions).
- Make sure to simplify your ideas and put them in a straightforward way. As a question is raised in the reader's mind, the paper is ready to answer it.
- Make sure that each of your results depends on the main theorem and/or that all the theories used are related to each other and defined in a proper step by step order.
- Special attention must be given to the notations used, so before starting your math term paper you should specify them and be consistent throughout the text. *Make sure that all of the variables that you use are described.*
- Use mathematical symbols correctly (see also [1]).
- Try to be concise and clear with definitions. Also use them through the paper.
- Be sure to include worked out details of the main topic or result. Include simple examples to illustrate of all important ideas (pictures and diagrams could be useful).
- Make sure your writing is clear and easy to understand. (no sentence fragments; punctuation is correct (including in formulas); text flows smoothly; spelling is right.)
- Use third person writing your paper.
- Label pages, equations, definitions, theorems, sections, subsections, figures, tables etc.
- Organize the paper into named sections (subsections etc.) to make the exposition clearer.
- Make sure that you have read the "Communicating Mathematics" handout and follow techniques/directions explained there. Also read [1] and [2].

## Outline

The outline should briefly describe what you plan to include in the text. It must be typed (double space with margins 1 inch wide.) Follow the following layout:

**Title Page** should be at the top. It should include Student's Name, Course and Section number, topic number (as it appears in the List of Possible Topics), and Title.

**Introduction** State the focus of your paper (one or two sentences). Then list **key points** that you will be describing in the paper (have at least three).

**Body** For each key point, stated in the introduction, outline the topic sentence idea and supporting idea(s).

**Summary** Summarize each of the key points (main ideas) that have been discussed in the body.

**Conclusion** Final thoughts (at least two clear sentences)

**References** should be in alphabetical order by last name and enumerated.

## Draft

A draft of the paper should reflect your idea of the final paper as close as possible. However, it is not necessary to get a polished presentation. It must be typed (double space with margins 1 inch wide.)

- Remember that writing the paper is an "iterative process". Read your draft(s) several times paying a particular attention to structure, logical flow, spelling/grammar. Consider to bring your draft to Writing Center for help.
- Your draft must be written in the following format:

## Term Paper Format

**Title Page** should be at the top of the first page. It should include Student's Name, Course and Section number, topic number (as it appears in the List of Possible Topics), Title and Abstract.

**Title** As with any paper you write, a title is important. It should catch the attention of the reader as well as reflect the content of your paper. It should not be too long and it should not be too general.

**Abstract** Briefly summarize your paper proposal explaining the basic purpose of your paper, state the focusing question(s). Abstract is not the same as an introduction! An abstract should be short and as independent from the paper as possible.

Abstract is not the same as a paper proposal! Avoid empty phrases like "In this paper we consider, among other results, that ...". Just write "We consider .."

Write your abstract after writing the body of your paper.

**Table of Contents** Make sure to update it (if you make changes in your document) if you type it manually. Note that there is an option in Word and LaTeX to create it automatically.

**Introduction** State the problem here. Explain why the problem is important to you (or someone else). Describe the history of the problem. Briefly describe what will follow in the paper (state the question or questions that you will examine in your paper). You may include schemes of logical dependence of sections. You may also mention related and open problems.

**Body** (the main part consisting of a few sections.) The body should be a mix of English narrative and more abstract representations (define everything that you are talking about, discuss discoveries and applications). Be sure to include examples to help your reader understand your reasoning. Divide the body of your report into sections and subsections for better organization.

**Conclusion** The conclusion will be the last paragraph of your paper. It should not sound too much as an introduction. Sum up your key points here. It should give your reader a sense of satisfaction and completion. You may also suggest further reading and explain why your topic is important for readers.

**References** *Cite sources through your paper* and list the references after. References must be given for each and every work cited. You must use and cite two or more sources, at least one of which must be printed (e.g. a book, journal, or newspaper article).

**Figures and Tables** All graphs, tables, diagrams and other pictures should be neatly drawn with relevant labels. Do not embed them in the text. They should be collected in an appendix at the end of the paper, labeled (for references in the text) and titled.

**Appendix** You can have more appendices if needed. Materials in an appendix should be referenced at some point in the body of the paper.

**Good luck with your paper writing!**

## References

- [1] K.P. Lee, A Guide to Writing Mathematics, <http://www.cs.ucdavis.edu/~amenta/w10/writingman.pdf>
- [2] M. Tomforde, Mathematical Writing: A Brief Guide, <http://www.math.uh.edu/~tomforde/MathWriting.pdf>