

GUIDELINES FOR UG THESIS (9/2018)

Department of Chemical Engineering, Columbia University

General Remarks

An UG thesis must be prepared with word-processing software (e.g. Word equipped with an equation writer). It should be sufficient in scope to justify 6 points of technical elective credit towards the degree. The document should be self-contained, employing a format similar to that used for scientific publications (see below as a suggestion). The thesis should put the work in context (e.g. explain the compelling motivations for the work, provide sufficient review of closely related prior works), and document the methods and results in sufficient detail that the work could be reproduced if necessary. Discussion and conclusions should be included to provide scientific and/or technological interpretations of findings when relevant and to underscore the important accomplishments of the work. Publication quality illustrations, plots, tables and charts should be included as needed, either in the body of the text or collected at the end of the thesis; each should include an appropriate caption. References in standard format and corresponding to sequential citations in the body of the thesis should also be collected at the end of the document. Appendices may be added to document raw data, computer programs, or other supplemental material.

Suggested Format

1. **Title Page.** Include authors, affiliations.
2. **Abstract.** A 1-300 word summary of the work.
3. **Table of Contents.** List page numbers of different subsections of the thesis.
- 4.
5. **Introduction/Motivation/Background.** Give a general statement of the problem studied. Summarize the compelling motivations for the work. Summarize any key prior works and/or background theory needed to analyze/interpret data.
6. **Materials/Methods.** For laboratory based projects, state precisely what materials are employed. Describe the main experimental/computational/theoretical equipment/techniques employed. State concisely what is measured and what is calculated from raw data.
7. **Results and Discussion.** Systematically present the important experimental/computation results determined from raw data. Provide interpretations of the results in the context of the current understanding/theory.
8. **Conclusions.** Summarize your main findings. Explain how your work contributes to a solution of the problem studied, for example, explain what new technologies your work might enable. Where relevant, include suggestions for improving experiments/calculations.
9. **References.** Compile a sequential list of references cited in the body of the thesis, each in a standard format (e.g. reference format of the American Chemical Society journals). Web citations should be avoided insofar as is possible.

10. Illustrations, Figures. Schematics, graphical displays of data, etc. can be distributed throughout the document or collected together at the end after references. Each should be of adequate quality to allow publication if needed and each should include an adequate caption.

11. Appendices/Supplemental Materials. When appropriate, the thesis should include appendices or supplemental materials (e.g. compilations of raw data, laboratory notebook, computer programs).

Deadline and Review

A student's intention to submit an UG thesis should be submitted in writing to the UG Committee by the end of September of the student's senior year (term VII), indicating the research sponsor and identifying a second faculty member who will read the thesis and provide feedback. A completed thesis must be submitted by the start of the first week of classes of term VIII to a specified member of the UG committee (^see below). Acceptance of the thesis is subject to approval by the research sponsor and one additional faculty member in the department (second reader) qualified to sponsor UG research (tenured or tenure track faculty) appointed by the UG committee. The research sponsor is responsible for submitting a grade to the registrar for the 6 points of research based on the thesis work. A copy of the approved thesis (but not necessarily all the supplemental materials) must be put in the student's permanent file.

^As of 9/9/2020: emails and senior thesis documents should be submitted to Prof. Boyce (cmb2302@columbia.edu)

Guides to Good Technical Writing

The following provide guidance for good technical writing

Beer, D., and McMurrey, D. A Guide to Writing as an Engineer 3rd Ed., Wiley

Kate L. Turabian. "A Manual for Writers of Research Papers, Theses, and Dissertations." Chicago Style for Students and Researchers. 7th edition.