

# Guide to ECE Theses and Dissertations

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The ECE thesis check comprises

- a **format check**, in which your document is checked for compliance with [Graduate College requirements](#), as well as a small number of departmental format requirements and suggestions, and
- a **copyedit**, in which your document is read for proper American English grammar, spelling, style, and usage, with special attention to treatment of numbers, symbols, units of measure, equations, special terminology, and figures/tables.

This guide summarizes ECE requirements and suggestions beyond those of the Graduate College. Section 1 covers issues normally addressed in the format check. Section 2 covers issues addressed in copyediting.

## 1. Format

### Appendices

Give appendices descriptive titles; e.g.: "Appendix: Device Fabrication Process." Give multiple appendices letters (A, B, C), not numbers as is done for chapters in main text.

### Displayed Equations

Mathematical expressions that are referenced later in the text should be displayed (not in-line) and numbered according to the same system as figures and tables. Displayed expressions should be centered (preferred) or indented, with numbers (if used) in parentheses flush right. Insert any punctuation after the equation, not the number. Text references to numbered equations should be capitalized, with parentheses preceded by a space: "Equation (2.1) shows ..."

Refer to our [handy download](#) for tips on breaking long, displayed equations.

### Lists of Figures and Tables

These lists are not required; in fact, they are discouraged for theses submitted at deadline time.

### Placement and Referencing of Figures and Tables

A figure or table should appear in one of three places:

1. On the page where it is first referred to by number (i.e., "Figure 1.1 shows ...") in the text.
2. On the first possible page after its first text reference. (This may be several pages later if many figures are referenced in a short passage.)
3. At the end of the chapter (when all figures and tables are placed at ends of chapters).

Every figure and table must be referred to by number in the text. E.g.: "Figure 5.2 shows ...."

If for some reason you must refer to a figure or table out of sequence, it may be helpful to give the page number: "These results will be shown later in Figure 3.3, page 55." Note that this would be for reasons beyond in-depth discussion of the figure.

Figure captions go *below* figures, and table titles go *above* tables. Be consistent in use of capitalization and terminal punctuation for these captions and titles.

### References

ECE requires a neat, thorough list of references that conforms to a consistent style — typically that defined by IEEE, though those of AGU (Radio Science) and AIP and its member societies are also common among electrical engineers. Reference style guides are available online at the various journal/society web sites, and the ECE Publications Office also provides guides ([IEEE](#), [Radio Science](#), [AIP](#)). Custom reference styles may be permitted if they meet scholarly standards and are consistently adhered to.

### Single-Spaced Elements

ECE prefers single-spacing for the following elements:

- table of contents (single-space within each chapter but leave a line space between chapters)
- lists of figures and tables, if included (but again, leave a line space between chapters)

- figure captions and table headings
- chapter titles that exceed one line
- section and subsection titles that exceed one line
- footnotes
- references
- lengthy quotations

## Table of Contents

A lengthy TOC that provides an outline of the thesis down to the level of subsections or further is unnecessary and invites errors; therefore, ECE recommends a skeletal TOC comprised of chapter and main section titles, no more. You can even include chapter titles only — a very smart option if you're submitting at deadline time.

## 2. Copyedit

### Abbreviations

Abbreviations should be defined the first time they appear in both the abstract and the main text. After that, only the abbreviation is necessary, though the author may see fit to repeat the definition for a new chapter or after an extended period of disuse of the abbreviation. A list of abbreviations at the beginning of the document obviates the necessity of repeating the definition in the main text.

References to figures and equations may be abbreviated using "Fig." and "Eq." as long as the abbreviations are used consistently. The exception is at beginnings of sentences, where words should always be spelled out: "Equation (3.2) gives the formula for ...."

### Capitalization

Capitalize names of chapters, sections, figures, tables, and numbered equations when they are referenced in text: "Results will be given in Chapter 5." "The right-hand side of Equation (2.3) is ...."

### Mathematics

Use correct terminology and notation, and follow the conventions of your field. A symbol should be rendered with the same typography (e.g., font, italics, bold, upper/lower case) whether it occurs in displayed or in-line math, and it should always denote the same thing. A sentence should not begin with a math symbol — especially a lower case one, and especially when the previous sentence ended with a math symbol. If you punctuate displayed math, do so consistently.

### Numbers

In general, use words for numbers up to 10 (e.g., one, two, three), and use numerals for numbers 10 and up. Exceptions:

- Always use a word at the beginning of a sentence: "Forty trials were run." (You may wish to recast as "We ran 40 trials.")
- Quantities with units of measure are always numerals: 3 mm, 5 V.
- Numbers used as nouns are usually set as numerals: Chapter 3, sample 16, device 2.
- When comparing, within a paragraph, numbers that are above and below 10, make them all numerals: "On Tuesday and Wednesday, we completed 8 and 15 observations, respectively."
- If two numbers that would normally be set as numerals appear next to each other, it may be best to change the lowest number to words: "We completed sixteen 45 min experiments."
- In some cases it may be clearer to spell out zero and one than to use numerals 0 and 1.

### Units of Measure

- Quantities should be expressed using the International System of Units (SI).
- Always leave a space between the numeral and the unit symbol (0.2 pA, 127  $\mu$ m).
- With the exception of  $\mu$ , do not italicize unit symbols.
- When discussing units without quantities, use words not symbols: "A millimeter-scale device ...."
- A convenient table of units and quantity symbols can be found online in the IEEE Information for Authors kit: Go to the [IEEE Author Digital Toolbox](#) and scroll down to the link to the kit under "Article Preparation and Submission." (There are other helpful resources in the Digital Toolbox.)

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