Final Report for ECE 445, Senior Design, [Fall/Spring 201x]

TA: [TA Name]

[xx] [December/May] 201[x]

Project No. xx

[First Author Name (alpha order)]

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[Third Author Name]

[Fourth Author Name]

By

[report title]

**Abstract**

The abstract is short (150 words or less) and provides enough of a summary of the report for the reader to decide whether to read the entire document. State very concisely what your device or system does, and the main findings and results of your project. Save background information (e.g., motivation, competitors) for the introduction and design details for the body of the report. Do not give an advertising pitch. Note that the abstract does not appear in the table of contents. (This achieved by stripping out the heading style.)

Note that **you can ignore the TOC on next page because it is generated automatically.** Work on the body of the report, then hit the Update tab on the TOC and *voilà*.

When you double-clicked “ECE 445 Template.dotx,” you opened a new, untitled document in Microsoft Word, which has the main components of your final report set up for you. Save the new document, replace the red text and bracketed section heads with your own, insert carefully prepared graphics, follow the guidelines document (“Preparing Your Final Report for ECE 445”), proofread and revise, and you’ll likely end up with a successful report.

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# 1. Introduction

Briefly describe the science or engineering problem to be addressed in the report, as well as the purpose and usefulness of the device or system you have built. Summarize the contents of the upcoming chapters as well as the main conclusions of your project, to be elaborated in the last chapter.

## 1.1 Section head

To create a section head, go to the Styles gallery under the Home tab and pick Heading 2. It automatically formats as above and creates a table of contents entry (after you click the Update tab). Word will not make the capitalization consistent; you have to do that yourself.

Figure 1 is an example of figure and caption style. Table 1 is an example of table and table title style. A starter table for parts costs is in Chapter 4 of this template.

Use the References🡺Insert Caption tool to generate consistently formatted captions (always *below* the figure), and use the grouping function in Word’s drawing tools to hold figure and caption together. Use picture formatting tools to hold figures in place (preferably at top or bottom of page) and to define text wraps (“top and bottom” is best).

Use Word’s table design and layout tools to format titles, column heads, and borders.

Insert page break at end of every chapter to ensure next chapter starts on new page.

Figure Example of placement and caption for a block diagram. With picture selected, go to References🡺Insert Caption. This creates a neat, consistent caption style that stays connected to the figure. Size the figure so that one-inch margins are preserved. Group the figure and caption to hold them together.

|  |  |  |
| --- | --- | --- |
| **Table 1 Example of a Table and Its Title** | | |
| **Part** | **Electricity** | **Magnetism** |
| Field intensity | **E** | **H** |
| Flux density | **D** | **B** |
| Constitutive factor | **ɛ**b | **µ**c |

# 2 Design

Discuss general design alternatives. Give equations, simulations, general circuits. Describe design in detail, addressing each major component. Include schematics with components, drawings, flowcharts, etc. Some teams may wish to split this chapter in two: 2. Design Procedure, and 3. Design Details. This template will not automatically update numbering systems for chapters, sections, figures, tables, etc., so keep track of them as you develop and revise the text.

Following is a “template” for displayed math. Use the MathType extension of Word to generate your own content, and note the use of the invisible table (no borders) to keep the optional number flush right.

|  |  |
| --- | --- |
| Insert math here using MathType | (number) |

## 2.1 [Component or Block]

To create a section head, go to the Styles gallery under the Home tab and pick Heading 2. It automatically formats as above and creates a table of contents entry (after you click the Update tab).

### 2.1.1 [Subcomponent or subblock]

To create a subsection head, go to the Styles gallery under the Home tab and pick Heading 3. It automatically formats as above and creates a table of contents entry (after you click the Update tab). Even lower level section heads can be created the same way, but they are likely unnecessary.

# 3. Design Verification

Insert text.

## 3.1 [Component or Block]

Insert text.

### 3.1.1 [Subcomponent or subblock]

Insert text.

# 4. Costs

Make sure that any tables of costs are numbered, given titles, and cited directly in the text.

## 4.1 Parts

Following is a starter table for parts costs. Add cell contents as well as rows and, if necessary, columns. Update the table number according to your sequence. Note that columns 1 and 2 are set up for centered text (words) and columns 3-5 (numbers) are set up for right-alignment so that decimal points align.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table X Parts Costs** | | | | |
| **Part** | **Manufacturer** | **Retail Cost ($)** | **Bulk Purchase Cost ($)** | **Actual Cost ($)** |
|  |  |  |  |  |
|  |  |  |  |  |
| **Total** |  |  |  |  |

## 4.2 Labor

# 5. Conclusion

The conclusion may contain the following sections or others of your choosing.

## 5.1 Accomplishments

## 5.2 Uncertainties

## 5.3 Ethical considerations

## 5.4 Future work

# References

[1] *Motorola Semiconductor Data Manual,* Motorola Semiconductor Products, Inc., Phoenix, AZ, 2007.

[2] *Double Data Rate (DDR) SDRAM,* datasheet, Micron Technology, Inc., 2000. Available at: <http://download.micron.com/pdf/datasheets/dram/ddr/512MBDDRx4x8x16.pdf>

[3] Linx Technologies LT Series, web page. Available at: <http://www.linxtechnologies.com/products/rf-modules/lt-series-transceiver-modules/>. Accessed January 2012.

[4] J. A. Prufrock, *Lasers and Their Applications in Surface Science and Technology,* 2nd ed. New York, NY: McGraw-Hill, 2009.

[5] W. P. Mondragon, “Principles of coherent light sources: Coherent lasers and pulsed lasers,” in *Lasers and Their Applications in Surface Science and Technology,* 2nd ed., J. A. Prufrock, Ed. New York, NY: McGraw-Hill, 2009, pp. 117-132.

[6] G. Liu, “TDM and TWDM de Bruijn nets and shufflenets for optical communications,” *IEEE Transactions on Computers*, vol. 59, no. 1, pp. 695-701, June 2011.

[7] S. Al Kuran, “The prospects for GaAs MESFET technology in dc–ac voltage conversion,” in *Proceedings of the Fourteenth Annual Portable Design Conference*, 2010, pp. 137-142.

[8] K. E. Elliott and C. M. Greene, “A local adaptive protocol,” Argonne National Laboratory, Argonne, IL, Tech. Rep. 916-1010-BB, 2006.

[9] J. Groeppelhaus, “Java 5.7 tutorial: Design of a full adder,” class notes for ECE 290, Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, 2011.

# Appendix A Requirement and Verification Table

An appendix is a good place for the Requirement and Verification Table from your design review. Below is a starter table. Including these details here will help to avoid lengthy and tedious narrative descriptions in the main text, which may not be of immediate interest to your imagined audience of company managers and professionals. Any requirement that is not verified should be explained either in the main text or the appendix. Note that both the pagination and the numbering of figures, tables, and equations continues from main text to appendices.

|  |  |  |
| --- | --- | --- |
| **Table X System Requirements and Verifications** | |  |
| Requirement | Verification | Verification status  (Y or N) |
| 1. Requirement    1. Subrequirement    2. Subrequirement    3. Subrequirement | 1. Verification    1. Subverification    2. Subverification    3. Subverification |  |
| 1. Requirement    1. Subrequirement    2. Subrequirement    3. Subrequirement | 1. Verification    1. Subverification    2. Subverification    3. Subverification |  |
|  |  |  |
|  |  |  |