

## Final Report Guidelines

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Final Technical Demo: April 6 and 7, 2016 (in lab ITB/156)

Final Presentation: ECE Expo Friday, April 8, 2016 (in CIBC Hall)

Final Report: Monday April 11, 2016 by 4pm to TA Warren Pawlikowski (in ITB/239).

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- ◇ **Overview:** *Congratulations!* You have reached the end of the capstone project course and are ready to discuss your design accomplishments.

The final report and presentations represent the culmination of the work done in *EE4OI6*. This document gives each team the ability to show your innovative solutions to the projects you have chosen.

The final evaluation consists of three phases:

- ⇒ Project Technical Demonstration
- ⇒ Project Presentation at *ECE Expo*
- ⇒ Final Report

- ◇ **Project Technical Demonstration:** Each group will be required to demonstrate the full operation of their project. Each group should prepare their prototype and show that it meets *all* of the deliverables set out in the Proposal. Individual marks will be assigned to each student depending on answers to questions regarding their portion of the design. The instructor will test each prototype under a number of situations to ensure its conformity to the deliverables promised. The entire demonstration time allotted is one hour per group including questions. The schedule for this examination is posted on the course website.

- ◇ **Project Presentation at *ECE Expo*:** Each group is required to prepare and present a poster at the *ECE Expo*. This event will be attended by the entire department and your goal is to clearly describe your contribution. CIBC Hall will be open at 8am and your poster should be displayed *before* 8:30am on the presentation day. At least one member of the group must be at the poster at all times. The entire group should be available for a 30min time slot in the day in order to present their poster to the instructor and industrial judges for final marking. If possible, groups are encouraged to demonstrate all or part of their project at this event.

A poster board will be provided to which you can affix standard 8.5×11 inch sheets of paper. The poster board is 48 inches total width by 36 inches height. This is broken into two side panels of 12 inches in width, and a larger middle panel which is 24 inches wide.

Students are not required to use this board, however, due to space limitations the size of the display should be no larger than the dimensions provided. Each group will be judged on the neatness, clarity and visual impact of the poster. In addition, each student will be marked on their verbal presentation using the poster board.

This event will give you a chance to show off your successes and show our department and the faculty the excellent work done by our students!

- ◇ **Final Report:** The final document must be a self-contained professional report describing the design, implementation and testing of the project. The report must adhere to standard IEEE publication guidelines for papers (for IEEE Transactions templates: [http://www.ieee.org/publications\\_standards/publications/authors/authors\\_journals.html](http://www.ieee.org/publications_standards/publications/authors/authors_journals.html))

- ⇒ 8 to 10 pages in length (excluding appendices)
- ⇒ 2 columns per page, 12 point font, single (12 point) spaced
- ⇒ Title (14 point font, centered in page)
- ⇒ Authors and affiliation (12 point, centered)
- ⇒ Abstract (150 to 200 words)
- ⇒ All references should be located at the end of the paper but must be properly cited in the body text
- ⇒ The font can be either Times or Times new Roman
- ⇒ Margins: at least 0.75" from the edges
- ⇒ Pages must be numbered

- ◇ **Required Sections in Report** - Add subsections to each of these sections as deemed necessary.

- ⇒ **Introduction** - Provide the motivation and background for your report. Include a brief literature review to put your work in context.
- ⇒ **Design Methodology** - Provide details to justify all engineering assumptions and decisions made in the project. Document all approaches taken, be they successful or not.
- ⇒ **Analysis** - Provide your analytical analysis or simulation results from your project. How do they compare with earlier assumptions? How are these results used to guide your implementation.
- ⇒ **Implementation** - Describe how you realized your concept. List all parts, and materials used as well as the final budget for your prototype. Provide details on how components or equipment was selected. Justify a set of metrics which indicate how well your design functions. Present measurement results and quantify performance based on metrics. Compare measurements with analytical or simulation results and discuss any discrepancies. Discuss and justify any departures in the prototype from your initial proposal.

- ⇒ **Sustainability and Social Impact** - Identify and quantify the full range of short-term, long-term, local and global impacts of your engineering project on society, including: economic aspects; social, cultural, and human health aspects, and ecosystem integrity aspects.
  - ⇒ **Team Organization** - Describe the organization of the team as well as how work was divided amongst group members. List which student(s) took leadership roles of particular parts of project. Document processes and methodologies developed to manage the effectiveness of the team both in terms of the quality and quantity of the work produced.
  - ⇒ **Conclusions** - Summarize what was accomplished in your project. List all achievements as well as shortcomings of your approaches. Contrast the final performance of your project with your original set of deliverables in your proposal. Provide a justification for significant departures. Describe directions for future work.
  - ⇒ **References** - Cite and list all references used in IEEE bibliographic style.
  - ⇒ **Data Sheet** - Provide a brief description of the functioning of your design (1 page). The data sheet should provide quantitative measures of performance of the final design.
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- ◇ A listing of well documented source code and circuit diagrams should be included and referred to in the main body of the document. Please provide on a CD/DVD/USB stick attached to the report.
  - ◇ All components of final report should be bound together.
  - ◇ In addition to the hardcopy, an electronic copy of the work should be submitted. It includes the Adobe PDF file of the final report, appendices, and all source code, circuits schematics, board layouts, etc.. Please email reports as a single archived file to the TA Mr. Warren Pawlikowski [pawlikws@mcmaster.ca](mailto:pawlikws@mcmaster.ca).
  - ◇ Final report preparation guidelines: For a report to be successful it must convey technical information in a concise and well-organized manner. The report should be written at the level of a newly graduated engineering student from your ECE program. Include all relevant information required to understand your implementation and interpret your results. Examples of useful information include: how many gates does the design require according to analysis, how many gates does it require when synthesized, how did you partition the design to implement it on an FPGA chip, how did you compile it, how fast can you clock it, what suggestions do you have. Be specific and give quantitative results when possible.