McGill

Department of Electrical and Computer Engineering

Design Project II / Honours Thesis II

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Office hours: Thursdays 2:00pm to 4:00pm (ENGMC547).

Language In accordance with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

Academic Integrity: McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/integrity for more information).

Course Overview This course is the second part of a two course series for the ECSE capstone design project/Honours Thesis. The project is undertaken with close mentorship by a staff member and under the supervision of the course instructor. The project consists of defining an engineering problem, reviewing relevant background, acquiring/analyzing data, and seeking solutions using appropriate simulation/analysis tools and experimental investigations. Professional engineering practices will be followed.

Groups You must maintain the same group structure as you had in the first design project Course. Honours Theses are based on individual work and cannot be done in a group.

Course Deliverables A number of deliverables are required throughout the course. See below for details and deadlines. All course submissions must be made in electronic format (pdf document). Please email all deliverables to ece.designprojects@gmail.com, with a copy to all group members and your project advisor. Additional documents (computer code, etc) can be submitted on the same system as a compressed zip file. Note that the project supervisor may require a hard copy or other formats in addition to the electronic submission above.

Project Topics The project topic should be a continuation of the project started in the first design project/Honours thesis course.

Intellectual Property You are required to address issues of IP ownership at the beginning of the project. This is particularly important for projects involving industry. All groups must discuss this issue and come to an agreement with the faculty supervisor and industry partner when applicable. A discussion on IP ownership should be included in the initial project proposal. In general McGill does not claim ownership of the project as long as the faculty advisor does not provide any intellectual property. For industrial projects you are free to assign all IP to the company. For students in the second course, the same agreement reached in design project I or Honours Thesis I still applies.

Impact on environment and society The groups should consider issues related to the project's impact on the environment and on society. A section of the final report should be dedicated to an analysis of your project impact on the society and the environment.

Deadlines Deadlines will be strictly enforced. In particular, the deadline for the final report cannot be extended. You must plan your time accordingly and submit your best work possible before the deadline.

Grading Scheme and Deadlines

	Due Date	Weight
Progress Report #1	Feb. 28, 2013	2%
Progress Report #2	Mar. 21, 2013	2%
Final Report – First Draft	Apr 2, 2013	6%
Final Report	Apr 16, 2013	70%
Oral Presentation (Poster)	Last week of classes	20%

First Progress Report (Due Feb 28 2013)

Your first progress report of the semester should include the following information:

1) **Project title:** You must provide the title of the project. If you have decided to change the title from what you had before, please include both new and old title and explain why the change was needed.
2) **Name, Student number and email**: Provide a list of the group members including student numbers and email addresses for each student and which design project course each is registered in.
3) **Project supervisor(s):** Provide the name and contact information of the project advisor(s).
4) **Group meetings and meetings with advisor(s):** Indicate how often your group has met, and how often you have met your advisor. Indicate what is your plan for future meetings in the next three weeks.
5) **Project Readings:** Provide a bibliography of any material you have read since the beginning of the semester and any material you have identified for future reading in relation to your project.
6) **Recent progress:** Summarize your progress since the beginning of the semester. Identify difficulties that hindered your progress and the steps you are taking to overcome them. (1/2 page maximum).
7) **Future plans:** Summarize your plans for the next 3 weeks. Identify difficulties that hindered your progress and the steps you are taking to overcome them (1/2 page maximum).
8) **Project overview:** In this section you should introduce the overall theme of the project, and state clearly what are the goals you are trying to achieve. This section should also clearly convey why this project is important, what is the potential impact (applications, etc). This section can form the basis of the first chapter of your final report. (2 pages).

The following grading scheme will be used to evaluate your proposal:

a. Completeness: All required information is present (10%)
b. Formatting and presentation (10%).
c. Language (20%).
d. Part 6 (recent progress) 20%.
e. Part 7 (future plans) 20%.
f. Part 8 (project overview) 20%.

Second Progress Report (Due Mar 21, 2013)

Your first progress report of the semester should include the following information:

1) **Project title:** You must provide the title of the project. If you have decided to change the title from what you had before, please include both new and old title and explain why the change was needed.
2) **Name, Student number and email**: Provide a list of the group members including student numbers and email addresses for each student and which design project course each is registered in.
3) **Project supervisor(s):** Provide the name and contact information of the project advisor(s).
4) **Group meetings and meetings with advisor(s):** Indicate how often your group has met, and how often you have met your advisor since the last report. Indicate what is your plan for future meetings in the next three weeks.
5) **Project Readings:** Provide a bibliography of any material you have read since the last progress report and any material you have identified for future reading in relation to your project. Summarize the theory and background that you had to learn, and that you believe are necessary to be able complete your project. This section can form the basis of your section chapter of the final report (2 pages).
6) **Recent progress:** Summarize your progress since the beginning of the semester, with an emphasis on progress since the last progress report. Identify difficulties that hindered your progress and the steps you are taking to overcome them. (1/2 page maximum).
7) **Future plans:** Summarize your plans for the next 2 weeks. (1/2 page maximum).

The following grading scheme will be used to evaluate your proposal:

a. Completeness: All required information is present (10%)
b. Formatting and presentation (10%).
c. Language (20%).
d. Part 5: Project readings (40%)
e. Part 6 (recent progress) 10%.
f. Part 7 (future plans) 10%.

Draft of final report (Due April 2, 2013)

Please refer to the following section for the guidelines on preparing the final report. The draft report is expected to be as close as possible to the final report. It should contain all the relevant sections. The draft report will be graded by your advisor. It is very important for it to be as complete as possible in order to give you meaningful feedback.

Guidelines for the Final Report

Design Project II, and Honours Thesis II

This section outlines the general guidelines for writing the final report for students complete the second and final semester of the design project/Honours thesis course series. The students should discuss these general guidelines with their advisor and come up with a specific plan for their individual project.

1) **Title Page:** The title page must include:
    - **a.** The title of the project (note that the convention in English is for all words in the title to be capitalized, except for articles and prepositions).
    - **b.** The names and student numbers of the authors of the report (with course number for each).
    - **c.** The name of the project supervisor.
    - **d.** The name of any company involved in the project if applicable.
2) **Abstract:** The abstract is an executive summary that is maximum one page long. It should outline the over all motivation of the work, what where the goals of the project and what was achieved. This section should be as short as possible while conveying the necessary information.
3) **Acknowledgment section:** If applicable you may acknowledge the contributions of those who contributed to the project but are not on the author list.
4) **Table of contents.**
5) **Lists of tables.**
6) **List of figures.**
7) **List of abbreviations used in the report.**
8) **Introduction/Motivation/Objective Chapter:** In this section you should introduce the overall theme of the project, and state clearly what are the goals you are trying to achieve. This section should also clearly convey why this project is important, what is the potential impact (applications, etc).
9) **Background Chapter(s):** In this chapter you should summarize the theory and background that you had to learn, and that you believe are necessary for the reader to understand in order to understand the rest of the report.
10) **Design and Implementation Chapter(s):** In this section you must describe and document your design and the process used to reach this design. This is the core of your report and the structure can vary considerably based on the nature of your project. In general it is best to propose an outline and discuss it with our project advisor before proceeding.
11) **Results and tests:** In this section you must describe how you systematically tested and verified you design. You must describe the testing methodology and the test results (e.g. simulations, physical measurements, etc.).
12) **Impact on Society and the environment:** explore the environmental and social impact of your project. Your analysis should include your work at McGill as part of this project, however, the main focus should be on the product you are designing, the cost/benefit/risk of manufacturing it, the cost/benefit/risk consumers using it etc. Particular emphasis should be given to:
    a) **Use of non-renewable recourses (engery, etc)**: Consider all stages of the product from design, manufacturing, distribution, use by consumers, and disposal/recycling.

b) **Environmental benefits:** Benefits to the enviroment, comparisons with more polluting technologies etc.
c) **Safety and risk.**
d) **Benefits to society:** Quality of life, economic benefits, etc.

13) **Conclusion:** In this section you summarize again what was accomplished in this project. In addition, you can provide insight into the problem based on your experience in the project. The insights/recommendation should be targeted to potential users of your design and others who may want to build on your results or do work on a similar project.
14) **References:** A list of references that where referred to throughout the text. Note that it is important to refer to each of them at least once in the main text. Please use IEEE format: http://www.ieee.org/documents/ieeecitationref.pdf
15) **Appendices:** In many cases it is not necessary to have appendices. You may include appendices for material that do not naturally fit as part of the main report. For example:
    a. Long computer code sections that you feel are necessary to include in the report but would interrupt the flow if included in the main section.
    b. User manuals and other documentation for your designs, computer code, etc.
    c. Any important information that is generally long and detailed and would interrupt the flow of the main sections.

Grading Scheme

- **Formatting and presentation** (5%).
- **Language:** Grammar, spelling, appropriateness and accuracy of the language used. (5%).
- **Organization and flow:** The paragraphs and content are organized in a logical and easy to understand manner (5%)
- **Technical content:** Correctness and accuracy (25%)
- **Technical content:** Appropriateness of the contribution with respect to the credit weight of the course and the number of students in the team. (25%).
- **Results and testing section:** The design should be tested and verified in a systematic way, and sufficient evidence should be presented in the report. (25%)
- **Impact on society and the environment section** (10%).