

MEng Capstone Project (ECE 910)

Final Report Requirements and Submission Procedure/Deadline

The MEng program focuses on technical and professional development and engineering practice rather than the creation of new knowledge. Therefore, the capstone project is intended to apply knowledge learned during a student's program to a technical or academic challenge, industrial problem, and/or social, ethical, legal or regulatory concern. The capstone project might additionally or alternatively consist of an in-depth, critical review of the technical literature or feasibility study.

The capstone report is not expected to be a "mini-thesis" and original research is not required. Whether the capstone project involves conceptual design/analysis, simulations, or work done in a laboratory setting, the focus can either be technical or research, as defined below.

Technical: Application of engineering principles to answer or solve a specific technical, societal or technological question.

Research: Application of engineering principles to generate new knowledge or a new line of inquiry.

The emphasis of the capstone project is therefore on the application, interpretation, synthesis and/or pragmatic extension of existing knowledge. MEng students are expected to combine material learned in their graduate classes and information independently acquired through the detailed study and evaluation of particular theories, methodologies, technologies, governmental policies or case studies.

Exceptions to the provisions in this document are possible subject to the approval of the Associate Chair (Graduate) of the ECE Department.

Course registration, capstone topic selection

A student must register in ECE 910 for the term in which the project is to be completed. For this, the student and a supervisor (also called "first reader") need to agree on a project. The project supervisor needs to be someone with a doctoral degree in a field related to the project. In the exceptional circumstance that no supervisor can be found, the department chair may appoint a supervisor. Normally, the project topic and the supervisor will be identified after the student's other program requirements have been substantially completed.

Report Requirements

The following requirements must be met:

1. The report should typically be between 5,000 and 8,000 words and no more than 10,000 words, excluding preface material, figures and tables.
2. Reference to technical literature must be made in the development of the subject matter. The technical information is to be obtained primarily from technical publications, i.e., academic engineering or scientific journals, books, and technical reports. Information from websites may also be used but should be limited.
3. The report must conform to both the standards of good scholarship and to the *University of Alberta's Code of Student Behavior*. In-text citations and a list of references must be included in the report. Students must also be aware that the rephrasing of reference material or placing information in quotations does not remove the obligation to cite the source of that information. Students should refer to the University of Alberta's information on plagiarism, citing and paraphrasing, available at <https://www.ualberta.ca/current-students/academic-resources/academic-integrity/plagiarism.html>.
4. The format for references and in-text citations should be consistent in style; most styles are acceptable.
5. Tables, graphs, and illustrations should be used effectively to present information. Be sure to cite the graph, figure or table and discuss it in the text (i.e., if it is worth including, it deserves a sentence or two of explanation). The quality of all graphics should be high. Make sure all labels, captions and legends are clearly legible. Figures reproduced from reference material, whether photocopies or redrawn, must be properly credited to the original authors. Figure captions go below the figure while table captions go above the table.

6. The final report must be in 12-point font, 1.5 or double-spaced, on 8.5" x 11" paper, with 1" margins.
7. The report must include the components shown in Appendix A in the order given.

Supervisor Responsibilities

Projects can be proposed by anyone. A project proposer who is not an ECE Department faculty member can be a project supervisor (i.e., the first reader) as long as there is the involvement of an ECE faculty member with knowledge of the field who acts as the "second reader". Both readers need to have doctoral degrees in fields related to the project and are jointly responsible for ensuring that expectations for the quality of the project and the report are met.

The supervisor is responsible for providing general guidance over the course of the capstone project. The supervisor may request a project proposal from the student that outlines the focus of the project, including the rationale, purpose and methodology. Such a proposal is especially encouraged in the event that the student is, for example, interviewing human participants or working with non-anonymized medical data and requires ethics approval.

A further responsibility of the supervisor is to read and evaluate the capstone report to ensure that appropriate standards of quality are met. Once the supervisor is satisfied in this regard, the report needs to be forwarded to and approved by a second reader. At least one of the two readers needs to be a faculty member from the ECE Department. The project completion form signed by both readers needs to be then sent to the Associate Chair (Graduate)¹. In the event that the opinions of the second reader differ significantly from the project supervisor (i.e., the first reader), the case will be referred to the Associate Chair (Graduate)/MEng Faculty Advisor for resolution.

Capstone reports are graded on a pass/fail basis and no numeric grade is assigned. Students may receive a conditional pass subject to revisions, which must be implemented before the capstone project can be considered complete.

Student Responsibilities

In this capping exercise, the student must demonstrate an ability to synthesize the varied information accumulated throughout the MEng program. The project carries the weight of one normal graduate course and the work expectation is at the same level (approximately 156 hours). The capping exercise must meet the deliverable expectations of both the project supervisor (i.e., the first reader) and the second reader. It is the student's responsibility to work with the project supervisors to outline project scope, milestones, expectations and deliverables, submit the preliminary draft for review, address comments, and final submission meeting program deadlines detailed below.

Report Submission Procedure

The MEng report should be submitted to and approved by the supervisor (i.e., the first reader), the second reader, and the Associate Chair (Graduate)/MEng Faculty Advisor.

The following steps should be followed to submit the MEng report for approval:

1. The student finishes the report and submits it to their supervisor for approval. The supervisor may require changes to the report content and/or presentation. Thus, it may be returned to the student for changes and the student will then resubmit to the supervisor. Approval of the report by the supervisor may be an iterative process.
2. The supervisor finds a second reader who
 - is, as far as possible, at arm's length with respect to the project
 - has expertise in the field
 - holds a doctoral degree, and
 - has an engineering background, as appropriate, to ensure that the quality of the report meets engineering professional standards (quality, technically sound, style, format).

Once the report has been approved by both readers, the student must submit the approved version of the report (in PDF format) and the fully signed ECE910 completion form to the Graduate Program Office via eClass section for the corresponding MEng cohort.

¹ The MEng-related aspects of the Associate Chair (Graduate) responsibilities and authorities may be delegated to the MEng Faculty Advisor.

3. The Graduate Program Office will then send the report to the Associate Chair (Graduate)/MEng Faculty Advisor for review and approval. Again, the Associate Chair/MEng Faculty Advisor may require changes to the report content and/or presentation. If so, the student will receive an email from the ECE Department with the requested changes and the student will need to resubmit the report to eClass – MEng Cohort for approval by the Associate Chair (Graduate)/MEng Faculty Advisor.
4. Once the report is approved by the Associate Chair (Graduate)/MEng Faculty Advisor, the Graduate Program Office will prepare the paperwork to post a grade of “CR” for the capstone project course (ECE 910) and send it to FGSR.

MEng Capstone Project Course Completion Deadlines

As detailed above, in order to complete the MEng report and obtain credit for the MEng capstone project course (ECE 910), the MEng report must be submitted and approved by both readers and the Associate Chair (Graduate)/MEng Faculty Advisor. Submission and approval of the MEng report and posting of the grade for the MEng capstone project course (ECE 910) must be completed by the last day of classes of the term in which the student has enrolled in ECE 910.

In the event that the student is not able to complete the report by the end of the term, the Graduate Program Office will automatically post a grade of “IN” (Incomplete) for the MEng capstone project course and extend the deadline for completion of the report by 30 days. Any further extension must be requested by the supervisor and will be subject to the approval of the Graduate Associate (Chair)/MEng Faculty Advisor. If the student fails to have their report submitted and approved by the deadline, they must re-register in the MEng capstone project course to complete the MEng project.

NOTE: There is no specific processing time for reviewing and approving MEng reports – the processing time will vary depending on the supervisor’s and the Associate Chair (Graduate)/MEng Faculty Advisor’s availability and workloads and the nature of the report. MEng students must submit their first full draft of their report to the project supervisor at least 3 weeks prior to the last day of classes for initial feedback to receive feedback no later than 1 week prior to the final submission deadline.

Appendix A: Format of the ECE910 report

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|---|
| Title page (Please use template provided and do not give the title page a page number) |
| <i>Preface material (number pages consecutively in lower case Roman numerals e.g. i, ii, iii...):</i> |
| Abstract <u>or</u> Executive Summary Table of Contents List of Figures (include page numbers locating each figure; do not include citations for the figures) List of Tables (include page numbers locating each table; do not include citations for the tables) List of Symbols (if necessary) |
| <i>Report text (number pages consecutively in Arabic numerals e.g. 1, 2, 3...):</i> |

1.0 Introduction *i.e. use a numbering system to structure your report*

2.0 *for the body of the text*

2.1

2.2.1 *examples for numbering subsections*

2.2.2 *normally not more than three levels of subheadings*

2.2 *... etc.*

3.0 *... etc.*

4.0 *... etc.*

5.0 Conclusions or Conclusions and Recommendations

6.0 References

Of course, the section numbers for these last two will depend on how many sections you have in the body of the text.

Appendices (A, B, C etc.)

*For project type reports only - design notes, data, sample calculations, coding, etc. go here.
Appendices are named in the order that they appear in the report.*