

Department of Mechanical and Industrial Engineering  
University of Toronto  
**MIE498 Thesis Course Guidelines**

2013 – 2014

These guidelines pertain to full- and single-term theses in the programs of Mechanical Engineering and Industrial Engineering.

At the beginning of the term, students will establish with the supervisor, in writing, which reports are to be submitted, the content of these reports, their due dates, and the grading scheme. **The Thesis Topic Form, however, must be submitted to the undergraduate office by the deadline as described below and is not negotiable.** Notice that your supervisor may choose to follow these guidelines, but modifications may be desirable to best fit the nature of the thesis.

Approval to register for the fourth-year thesis must be obtained from the Undergraduate Office and is restricted to students with an overall average of 75%. This criterion can be relaxed under exceptional circumstances with the written approval of the supervisor.

Suggested Deadlines for Submission of  
Course Work – to be confirmed with the  
supervisor

**Full-Year Thesis**

Thursday, September 19, 2013 – 4:30 pm in MC109	Thesis Topic Form
Thursday, October 17, 2013 – 4:30 pm in MC109	Thesis Plan for Individual and Group Projects
Thursday, November 21, 2013 - 4:30 pm in MC109	Fall Progress Report
Thursday, March 13, 2014 – 4:30 pm in MC109	Winter Progress Report
Thursday, April 10, 2014 - 4:30 pm in MC109	Thesis Report

**Fall-Term Thesis**

Thursday, September 19, 2013 – 4:30 pm in MC109	Thesis Topic Form
Thursday, October 10, 2013 – 4:30 pm in MC109	Thesis Plan for Individual and Group Projects
Thursday, November 14, 2013 - 4:30 pm in MC109	Progress Report
Thursday, December 12, 2013 - 4:30 pm in MC109	Thesis Report

**Spring-Term Thesis**

Thursday, January 16, 2014 – 4:30 pm in MC109	Thesis Topic Form
Thursday, February 6, 2014 – 4:30 pm in MC109	Thesis Plan for Individual and Group Projects
Thursday, March 13 , 2013 - 4:30 pm in MC109	Progress Report
Thursday, April 10, 2014 - 4:30 pm in MC109	Thesis Report

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## Introduction

The purpose of MIE498 is two-fold: to let students pursue a technical project of interest, and to improve their communication skills. It is particularly useful for students thinking about graduate school and who want to learn more about engineering research. Preparing a Progress Report and a Thesis gives students experience in technical writing, and making oral presentations about their projects helps students improve their oral communication skills. MIE498 is an important course in the curriculum because an engineering graduate should be able to present to prospective employers proficiently.

Most students choose to work on a project on their own, but some decide to work in groups. Either way, a student or group settles on a topic with an academic supervisor by the beginning of the Fall term. After a few weeks, each student or group submits a plan for carrying out the project, developed in consultation with the supervisor. Before the December examination, each student or group submits a report describing their progress on the project. A final report, the Thesis, is due before the Spring Term examination.

**There is no standard template for any of the written reports, given the variety of formats (e.g. research or design), therefore, students must be sure to discuss the expected format with the supervisor, since the supervisor will mark the written work. Similarly, the grading scheme and marks distribution amongst the written reports needs to be confirmed with your supervisor. The grading information and rubrics contained in these guidelines are typical and will be adopted by many supervisors; however, the nature of your particular research project may make an alternate scheme preferable. You should discuss this with your supervisor and confirm it in writing.**

Students are expected to arrange regular meetings with their supervisor. While the role of the supervisor is to provide guidance around the thesis project throughout the year, it is the student's responsibility to initiate contact and seek assistance as needed. Students must also provide supervisors with regular updates of their progress, and advise them of any problems that arise.

In the event that a project group loses a member, the remaining group members should immediately meet with the supervisor to discuss the impact on the thesis, and make any necessary modification. The Undergraduate Counselor must also be notified immediately of these changes.

## 2. Suggested Marking Schemes - to be confirmed in writing with the supervisor

### a) Full-year thesis

Thesis Objectives and Plan – 10%  
Fall Term Progress Report – 20%  
Winter Term Progress Report – 20%  
Thesis – 50%

### b) Single-Term Thesis

Thesis Objectives and Plan – 15%  
Term Progress Report – 25%  
Thesis – 60%

The Department expects that the average student will spend about ten hours per week on this course – comparable with the hours spent on a regular course. Hence, for a full-year thesis, each student will spend about 100 hours on the project by the time the Progress Report is due in November, and more than 200 hours by the time the Thesis is due in April.

Since MIE498Y is a full-year course, no mark for this course appears on the student's Fall Grade Report. Instead, the fall mark appears on the Spring Grade Report, and counts for two courses in the calculation of the Spring Sessional Average. *Please note that final grades for this course may be adjusted or normalized to meet Faculty norms.*

### **3. Deadlines for Written Documents**

#### **3.1 Thesis Topic Form – mandatory registration requirement for all students.**

Each student must submit a completed Thesis Topic form on or before the above deadlines. The form must be signed by the student's supervisor. *The penalty for submitting the form late is a deduction of 20% from the assigned Progress Report mark for each week after the deadline.*

#### **3.2 Thesis Objectives and Plan**

*The penalty for submitting the Thesis Plan late is a deduction of 20% from the assigned mark for each week after the deadline.*

##### Individual Projects

The purpose of the Thesis Plan is to help a student develop a strategy for the project. The plan should:

- Define the objectives of the work
- Outline the steps to be taken to accomplish the objectives, e.g. it identifies the experimental technique, describes the numerical simulations, or lists the software or equipment to be used
- Provide a work schedule – what is to be done and when

The plan is generally a few pages in length. Students are advised to have a clear understanding of the supervisor's expectations for the project.

##### Group Projects

A group of students who intend to work together on a project must submit a collective Thesis Plan as described above. At the end of the Thesis Plan, students must state whether they will submit individual final theses or a collective document. This arrangement can be changed later only in consultation with the supervisor.

#### **3.3 Progress Report(s)**

The Progress Report normally contains 10 to 25 pages, although this should be confirmed with your supervisor. It should describe:

- (a) The motivation, background and objectives of the project, thereby laying the foundation for the Introduction and Literature Review sections of the Thesis.
- (b) The methodology used for the project and the work completed during the Fall term.
- (c) The work remaining to be carried out.

For a full-year thesis, the second progress report will normally cover:

- (a) The work done since the first progress report.
- (b) The plan for the remaining work.

Evaluation of the Progress Report will be based on: organization, background review, statement of objectives, tasks accomplished, technical content, discussion of results obtained, and the quality of the writing. It is expected that each student will have spent a minimum of 100 hours on the thesis project by the time the Progress Report is submitted.

*The penalty for submitting the Progress Report late is a deduction of 20% from the assigned mark for each day after the deadline.* This penalty is applied to each day of any intervening weekends.

Extensions will be granted in only *exceptional* cases, such as hospitalization, or death of an immediate family member. Requests for extensions based on equipment failures or computer/printing problems will not be granted. A written request for an extension must be submitted with supporting documentation (e.g. a U of T Medical Certificate) to the supervisor and the Undergraduate Counselor, at least one week before the deadline.

Since the quality of the written reports and the final thesis comprises a significant fraction of the grade, students will find it helpful to have an appointment with the staff in the Engineering Communication Centre (ECC) Office. Appointments can be booked online at <http://www.engineering.utoronto.ca/about/programs/communication/booking.htm>. Each student can take his or her Progress Report to the appointment to learn how to improve their writing skills and how to incorporate material from the Progress Report into the Thesis.

### 3.4 Thesis

*The penalty for submitting the Thesis late is a deduction of 20% marks from the assigned mark for each day after the deadline.* This penalty is applied to each day of any intervening weekends.

Extensions will be granted only in *exceptional* cases, such as hospitalization, or death of an immediate family member. Requests for extensions based on equipment failures or computer/printing problems will not be granted. A written request for an extension must be submitted with supporting documentation (e.g. a U of T Medical Certificate) to the Undergraduate Counselor and the supervisor, at least one week before the deadline.

It is expected that each student will have spent a minimum of 200 hours on the thesis project by the time the final report is submitted.

## 4. Theses

The Thesis is the final report on the project. The following describes a typical Thesis, but the content

and format of your Thesis should be confirmed with your supervisor.

By reading the document, a junior engineer should be able to understand the reasoning, procedures, methodology, results and conclusions. The document should be arranged in an orderly format which is attractive in appearance but reasonable in cost. Above all, the document must be well written. Proficiency in English accounts for part of the mark.

#### **4.1 Individual Projects**

A student working on his or her own submits an individual Thesis. The typical Thesis is about 40 to 80 pages long, including figures and tables. Guidelines for the format of the document are given below. Once again, the format of these should be confirmed with your supervisor.

#### **4.2 Group Projects**

Students working as a group may submit individual theses or a collective document. A collective document must state the responsibilities of each group member. Furthermore, each member must identify the chapter(s) written, attaching his/her name to the chapter(s); e.g. Chapter 3 (John Doe).

#### **4.3 Basis for Evaluation**

1. Editorship (total of 30 marks):
  - Abstract or summary
  - Table of Contents
  - Suitable division into chapters, with titles and sections
  - Language
  - Reference and Bibliography
2. Purpose (total of 10 marks):
  - The purpose of the Thesis must be clearly stated, should be recognized and sustained throughout the document.
3. Achievement of the purpose (total of 60 marks):
  - Suitability and use of factual data and/or theory.
  - Overall worth of the Thesis.

**The marking scheme above is a guide only. Supervisors may choose to use alternate marking schemes, depending on the format of the project. Therefore, students should speak with their supervisors to inquire about the marking scheme they will use.**

#### **4.4 General Requirements – to be confirmed with the supervisor**

Students must submit one hard copy of the Thesis to the Undergraduate Office (MC109). In addition, a soft copy should be emailed to the supervisor in the format of their choosing; i.e. MS Word, pdf, etc.

Like all technical documents, the Thesis should be written in the third person. Only one system of units should be used. While the metric system is recommended, the decision should be made in consultation with the supervisor.

#### **4.5 Format**

The document format often depends on the nature of the topic and the personal preferences of the student and supervisor, but the following guidelines have been found to be useful.

Aside from photographs, diagrams, computer printouts, etc., the manuscript should be typed on one side only of 8 ½ by 11 inch white paper. Margins should not exceed 1 ½ inches on the binding edge (left) and 1 inch on the other edges. The page centre line (for the title page, etc.) is 4 inches from the right edge. The text should be double-spaced, but quotations, footnote, etc. are more distinctive if single-spaced. A consistent numbering system should be used throughout the document. Good quality paper should be used.

All materials in the document must conform to the standard 8 ½ inches by 11 inches. Smaller items must be appropriately mounted, and larger items should be suitably reduced. The binding edge of these sheets must be 'packed' to avoid thickness disparities which would complicate the binding operation.

A typical Thesis is assembled in the following order:

1. *FRONT COVER*

Front and back covers of a spiral or Cirlox bound document.

2. *TITLE PAGE*

The title page is on the same paper as the body of the report.

3. *ABSTRACT*

The abstract is generally 100 to 200 words, single-spaced in block form, placed in the centre of a separate page.



4. *ACKNOWLEDGEMENTS*

Acknowledgements (to persons and/or supporting agencies).

5. *TABLE OF CONTENTS*

Begin the Table of Contents on a separate page. Show page numbers for each item. The Abstract does not need to be paginated, and therefore does not need to be listed in the Table of Contents. Chapters are numbered 1, 2, 3, etc. Appendices are numbered A, B, C, etc.

6. *LIST OF SYMBOLS (with their definitions)*

7. *LIST OF FIGURES (and captions)*

8. *LIST OF TABLES (and titles)*

Begin each list on a separate page. Figures, tables, equations, etc. should be numbered in a consistent system. Items 4 to 8 inclusive should be paginated sequentially in Roman numerals: i, ii, iii, iv, etc. All page numbers should be located consistently 1 inch from the top edge of the page, in the centre.

9. *BODY of THESIS*

The text portion should not exceed 50 pages, but student should consult their supervisors for guidance. It is best to begin each chapter on a separate page. Figures and tables are to be presented in individual ‘collection’ at the end of the text. The body of the Thesis should answer the following questions: What did you do? Why did you do the work (justification)? How did you do it (method of approach)? What did you find (results and conclusions)?

10. *REFERENCES*

The list of references constitutes a separate section. The references should be complete and easy to find.

11. *Collections of figures and tables, with an appropriate caption for each*

The recommended format for MIE496Y is to organize all figures and tables in a chapter entitled “Figures and Tables”.

12. *APPENDICES (as required)*

Begin each appendix on a separate page and label each as Appendix A, Appendix B, etc.

13. *Blank BACK COVER*

Examples of theses can be found on the MIE498 website.

## **5. Additional Information**

### **5.1 Plagiarism**

*Plagiarism* is a serious academic offence. Plagiarism is defined as representing another person's ideas as your own. Any text quoted indirectly (that is, in your own words) from another source must be correctly referenced; any text quoted directly (word for word exactly as it appears in the original) from another author must be placed in quotations and referenced. Similarly, data and figures taken from other courses must be fully referenced. Any indication of copying will be considered cheating, and the *University of Toronto Code of Behaviour on Academic Matters* will be followed. Please refer to the chapter on Academic Regulations in the *Faculty of Applied Science and Engineering Calendar*.

### **5.2 Administrative Responsibilities**

Questions regarding regulations and procedures should be directed to the Undergraduate Office and/or your supervisor.

### **5.3 Course Website**

The course website is located at: [www.portal.utoronto.ca](http://www.portal.utoronto.ca). The website is used to record marks, post relevant material, distribute assignment instructions, conduct class surveys, and respond to questions. You are expected to visit the site on a regular basis. Please note that only students who are registered in the course on ROSI will have access to the course website on Portal. Grades that appear on Portal are not final and that *final grades for this course may be normalized to meet Faculty norms*.

## **5.4 Fourth-Year Thesis Awards**

### **Centennial Thesis Awards**

The Centennial Thesis Awards were established in 1972-73 in honour of the Centennial of the founding of the Faculty in 1873. The Awards recognize excellence in fourth-year thesis work, and one award is made annually in each of the Faculty's nine degree programs, based on departmental recommendations. The award is in the form of a \$50 prize and an accompanying certificate. Original funding was provided through the Office of the Dean and now the funding is continued through the generosity of the University of Toronto Engineering Alumni Association.

### **R. F. Moore Thesis Award**

On the recommendation of the Chair, this award is presented annually to a fourth-year, Industrial Engineering student (s) for the best thesis in the Industry category. A certificate, and travel expenses for the recipient to attend the Canadian Society for Industrial Engineering (CSIE) conference will be awarded. If a joint project is selected, funding will only be provided for one presenter to attend the conference. To be eligible for this award: (i) The individual(s) must be a member of the University of Toronto Student Chapter of the CSIE. (ii) The thesis must be based on an industrial problem researched during the fourth year, or during employment in the summer prior to fourth year. The term "industry" is defined to include manufacturing, resource production, the service industry (including the health care field), and other settings. (iii) A letter from a senior executive of the company involved, attesting to the satisfactory completion of the research and analysis must be submitted with the nomination. (iv) The student(s) must include a note with their nomination in which they agree to present their work at the annual C.S.I.E. student conference in the following year, if selected for this award.

### **NACE International, Toronto Section, Prize**

The Toronto Section of the National Association of Corrosion Engineers (NACE) provides one prize annually with a value of \$200, to be awarded to a student in fourth year, whose thesis is on the topic of Corrosion Science and Engineering. The most satisfactory thesis of suitable quality will be selected for this prize.