Dept. of Mechanical Engineering (2017/2018)

Graduate Program Contacts

Dr. Marilyn Lightstone (Chair)
- Email: lightsm@mcmaster.ca
- Point of contact for any issues that cannot be resolved by the Associate Chair.

Dr. Chan Ching (Associate Chair – Graduate Studies)
- Email: chingcy@mcmaster.ca
- First point of contact for all graduate program academic matters.

Ms. Leslie Kocsis (Department Administrator)
- Email: kocsisl@mcmaster.ca
- First point of contact for all financial matters.

Ms. Florence Rosato (Graduate Program Administrator)
- Email: rosatof@mcmaster.ca
- First point of contact for all graduate program administrative matters.

Mr. Ron Lodewyks (Technical Services Coordinator)
- Email: lodewyks@mcmaster.ca
- First point of contact for laboratory or workshop matters.

Mr. Isaac Jackiw (Graduate Student Representative)
- Email: jackiwim@mcmaster.ca

Disclaimer

In the event of a discrepancy between the information provided in this handbook and the School of Graduate Studies Calendar, the latter prevails.
Department of Mechanical Engineering Graduate Events

Useful Links:
The Department of Mechanical Engineering:  http://mech.mcmaster.ca/
The School of Graduate Studies (SGS):  http://graduate.mcmaster.ca/
The School of Graduate Studies Graduate Calendar:

Department of Mechanical Engineering Graduate Program Handbook:
http://mech.mcmaster.ca/graduate_current.html

Engineering Graduate Student (EGS) Welcome Booklet:  www.macegs.com
Graduate Students Association (GSA):  http://gsa.mcmaster.ca/
International Student Services:  https://iss.mcmaster.ca/

New Graduate Orientation (for May and Sept new students):
Date: September 7, 2017
Time: 2:00 pm – 4:00 pm
Location: JHE 328 (Grad Lounge)

New Graduate Orientation (for January new students):
TBD

Graduate Potluck:
Date: Wednesday, August 30th, 2017
Time: JHE 328 (Grad Lounge)
Time: 2:00 pm – 4:00 pm

Workshop Safety Training (Mandatory for anyone planning on using the workshop)
TBD

Other Events: TBD
School of Graduate Studies  
McMaster Graduate Student Life

For the most up-to-date information about dates, times and locations of the following events and other opportunities for graduate students, visit organizer websites or other provided links.

Connect with McMaster Graduate Student Life on social media and visit their website at gs.mcmaster.ca  
Facebook at McMaster School of Graduate Studies | Follow on @McMasterSGS on Twitter | Find on Instagram | Plus at McMaster University School of Graduate Studies on Google+ |

Tuesday, September 5

New Graduate Student Welcome Breakfast

Time: 9:00 to 10:30am  
Location: The Phoenix

A welcome event for new McMaster Graduate Students. Students will have the option to sit inside or on the patio. In case of rain, students that opted to sit on the patio will have a rain date: Monday, September 11.

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Wednesday, September 6

Teaching and Learning Forum

Time: 9:00am to 12:00pm  
Location: CIBC Hall

Organized by the MacPherson Institute for Leadership and Excellence in Teaching and Learning

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Thursday, September 7

New Graduate Student Welcome Breakfast

Time: 9:00 to 10:30am  
Location: The Phoenix

A welcome event for new McMaster Graduate Students. Students will have the option to sit inside or on the patio. In case of rain, students that opted to sit on the patio will have a rain date: Monday, September 11.

--

GSA Welcome Barbecue

Time: TBD  
Location: The Phoenix
Annual barbecue presented by the Graduate Student Association.

**Friday, September 8**

**Graduate Student Resource Fair**

Time: 9:30 to 11:30am  
Location: CIBC Hall

On-campus resources, student clubs, and off-campus resources will be available. Representatives will speak with students and introduce them to services offered.

**Monday, September 11**

**Life After the PhD – with Trina Foster**

Time: 2:30 to 4:00pm  
Location: CIBC Hall

Trina Foster, Executive Director at Ontario Centre for Workforce Innovation, will deliver a presentation about career choices after graduate studies and how to prepare for the non-academic job market.

**Wednesday, September 14**

**International Graduate Student Fair**

Time: 4:30 to 6:00pm  
Location: CIBC Hall

Student volunteers will be on hand to talk to new international graduate students about different aspects of being in Canada (cell phones, banking, housing, food, etc.). New and returning international students will be able to meet new people and participate in a few activities.

**Thursday, September 14**

**Roller Skating @ The Waterfront**

Time: 6:00 to 9:00pm  
Location: Waterfront Rink (47 Discovery Drive)

Graduate students can join us for a night of roller skating on the waterfront.

For more information about these events or to register, visit [https://gs.mcmaster.ca/news-events/event-series/graduate-student-welcome](https://gs.mcmaster.ca/news-events/event-series/graduate-student-welcome)
SCHOLARSHIPS, FELLOWSHIPS, BURSARIES and OTHER AWARDS

Most graduate students admitted to the M.A.Sc. and Ph.D. programs in Mechanical Engineering will receive financial support in the form of a teaching assistantship and a departmental scholarship. The minimum level of support varies from year to year. Graduate students are encouraged to apply for both internal and external funding opportunities that may be available to them. Funding opportunities and deadlines will be conveyed to the students via email from the Graduate Program Administrator.

Useful Links:
The Department of Mechanical Engineering: http://mech.mcmaster.ca/
The School of Graduate Studies (SGS): http://graduate.mcmaster.ca/
The School of Graduate Studies Graduate Calendar: http://academiccalendars.romcmaster.ca/index.php?catoid=25
Engineering Graduate Student (EGS) Welcome Booklet: www.macegs.com
Graduate Students Association (GSA): http://gsa.mcmaster.ca/

TEACHING ASSISTANTSHIP
A useful guide is provided here: http://cll.mcmaster.ca/resources/pdf/TA_guide.pdf
You must complete the Faculty and Department TA training. Before commencing your Teaching Assistantship duties you need to complete and submit the following forms in consultation with the course instructor.

1. TA hours of work form.
2. TA performance expectations sheet.
CENTRAL RESOURCES and SERVICES

- Thesis Completion
  - Guidelines for Preparation
  - Format
  - Thesis Examining Committee (structure)
  - Thesis Evaluation
  - Submission

- Progressing to Degree Completion
  - http://graduate.mcmaster.ca/academic-services/degree-completion
  - Guide to Accessing Academic Advisement reports
    o https://gs.mcmaster.ca/sites/default/files/resources/academic_advisement_-_accessing_advisement_reports.pdf

- Policies and Regulations
  - Academic Integrity Policy
    o https://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf
  - Accommodation of Graduate Students with Disabilities
  - Collective Agreement for TA/RA in lieu of TA:
  - Leaves of Absence:
    o http://academiccalendars.romcmaster.ca/content.php?catoid=20&navoid=3572#2-5-7_leaves_of_absence
  - Petition for Special Consideration
    o http://graduate.mcmaster.ca/sites/default/files/resources/petition_july2016.pdf
  - Incomplete/Failing Grade:
    o http://academiccalendars.romcmaster.ca/content.php?catoid=20&navoid=3572#2.6.4_Failing_Grades_and_Incomplete_Grades
  - Student Code of Conduct:
    o http://studentconduct.mcmaster.ca/student_code_of_conduct.html
  - Student Appeals Process:
    o http://www.mcmaster.ca/policy/Students-AcademicStudies/StudentAppeal.pdf
  - Copyright Policy:
    o https://milo.mcmaster.ca/faqs/copyright_mac
  - Discrimination, Harassment & Sexual Harassment Prevention and Response Policy:
  - Research Integrity Policy
McMaster University  
Department of Mechanical Engineering  
Graduate Program Regulations  
(Complementary to the University regulations which are described in the School of Graduate Studies Calendar:  
http://academiccalendars.romcmaster.ca/index.php)

TYPE OF ENROLMENT

1. Full-Time Student

A full-time student is one who is studying on a full-time basis – treating studies like a full-time job, attending to coursework and research in a professional manner, being in consultation with and available to his/her supervisor at regular intervals (daily and/or weekly by mutual agreement) to monitor progress (please see appropriate sections of the current “School of Graduate Studies Calendar” definitions of full and part-time student and status; program duration; fees for graduate students; and financial support for full-time students).

2. Part-Time Student

A part-time student is one who usually has a full-time job outside the university, but wants to work towards his or her graduate degree on a part-time basis. A part-time student is limited to 3 graduate courses per academic session (Sept 1 – Aug 31) and will usually take more time to complete the degree (M.A.Sc. program: up to five years – 60 months - from original date of registration if student began as “part-time”; Ph.D. program: up to eight years – 96 months – from original date of registration if student began as “part-time”). Part-time students will also be required to consult and have regular contact with their supervisor at times convenient for both parties. Part-time students are not eligible for financial support from the department, nor Teaching Assistantships (nor Scholarship Equivalent) (please see appropriate sections of the current “School of Graduate Studies Calendar” as noted above in section 1. “Full-Time Student”).
MASTER of Applied Science (M.A.Sc.)

1. Program Requirements

The minimum course requirement is four half courses, at least three of which must be at the 700 level. Only courses taught in the Departments of the School of Engineering and Applied Sciences (listed here: http://www.eng.mcmaster.ca/departments.html) count towards the minimum course requirement, unless permitted by the Department and the School of Graduate Studies.

Entering graduate students in Masters or Doctoral programs within the Faculty of Engineering are required to complete a career planning exercise within their first academic year (September to August). Students will book through their department a planning session with a career specialist within the faculty and subsequently produce a report before the end of their first year. The report should not exceed 2 pages and must be submitted to the department's graduate advisor before the end of August in their first year. Students entering in May of a given year may choose to submit the report in the second academic year instead.

Students are required to present a thesis that embodies the results of original work that the candidate has completed and which demonstrates competence in Mechanical Engineering. Only the standard format thesis, as described in the document “Guide for The Preparation of Master’s and Doctoral Theses” (available from the School of Graduate Studies website), will be accepted for examination. An oral defence of the thesis is required.

Additional Requirements:

- ME 758 “Graduate Seminars in Mechanical Engineering”: Mandatory annual registration in Mosaic for Term 1 and Term 2 of every academic session. Please visit the link for information at: (http://mech.mcmaster.ca/events_seminars.html).
- SGS 101 and SGS 201 (online courses): Mandatory registration in Mosaic at the start of a student’s program only. Must pass and abide by these online SGS courses. Connect to Avenue to Learn to complete these online courses at: (http://avenue.mcmaster.ca/).
- Job Hazard Analysis (JHA) form (see http://jhaweb.mcmaster.ca/): Must complete a job hazard analysis (JHA) form with your supervisor and read and follow the appropriate Standard Operating Procedures (SOPs). Note: In the context of safety all graduate students are considered “workers”.
- Core Health and Safety courses: Must successfully complete and abide by the following core health and safety courses (available online here: http://www.workingatmcmaster.ca/eohss/training/):
  - Health and Safety Orientation
  - Asbestos Awareness
  - Ergonomics
  - Fire Safety
  - Slips, Trips and Falls
  - WHMIS 2015
  - Violence and Harassment

2. Supervision

Supervision of M.A.Sc. students is governed by the School of Graduate Studies regulations as outlined in the current “School of Graduate Studies Calendar” (see the following link and refer to section: “Regulations for Master’s Degrees” http://academiccalendars.romcmaster.ca/index.php).
3. **Supervisory Meeting**

The supervisor shall meet with the student between 9 to 12 months of commencement of the program for a formal review of progress. The student will complete his/her section of the supervisory committee report form that is used for doctoral students and submit to the supervisor at least one week in advance of the meeting. The supervisor will complete the form and submit to the Department. Graduate program administrator at the conclusion of the progress review meeting.

4. **Examining Committee**

Each M.A.Sc. student must successfully defend his/her thesis in an oral examination before a committee proposed by the Supervisor and approved by the Department Chair or his/her delegate. A member of the committee, other than the supervisor, will be appointed to chair the committee.

The committee shall be composed of 3 (three) members, including the supervisor. In the case of co-supervision, the committee will consist of 4 (four) members including the supervisors.

Students currently enrolled in the M.A.Sc. program may be transferred to the Ph.D. program before they complete their Master’s requirements. Regulations governing this scenario are stated in the current “School of Graduate Studies Calendar.” If a student is granted permission to enter the Ph.D. program while concurrently completing the M.A.Sc. program, the School of Graduate Studies requires the student to complete all requirements for the M.A.Sc. program (including defense and submission of thesis for binding) within 2 (two) months of the date of entry in the Ph.D. program. Students “who do not complete the requirements for the Master’s degree within the two months will lose their status as a Ph.D. candidate and be returned to Master’s status.”


5. **M.A.Sc. Thesis Defence**

The thesis defence starts with the candidate’s presentation of the main elements of the thesis, including the relevance of his/her work, approach, samples of the most important findings, and contributions. The presentation should not exceed 20 minutes. This is followed by one round of questions and another round of follow-up questions, as appropriate. The duration of the Master’s defence (including the candidate’s presentation) is expected to vary from 1¼ to 1¾ hrs, but it normally should not exceed 2 hrs. If the examining committee is unsatisfied with the candidate’s performance in the thesis defence, the student must retake the defence after completing any thesis revisions which may be recommended by the examining committee. The student must be informed in writing of the conditions he/she must meet to be able to succeed in the second and final defence.
M.A.Sc. Defence Procedures

Supervisor:
- Set up the examination committee by selecting two additional faculty members (internal or external) who are adequately familiar with the thesis research area.
- Inform Graduate Program Administrator using the attached form for approval of examination committee. The examining committee approval form should be completed and approved at least 2 weeks before the proposed defence date.
- After approval of the examination committee, finalize the date and time of defence, check room availability and email committee confirming defence, including date, time and room location.

Graduate Administrator:
- Have examination committee approved by the Department Chair or delegate.
- Post defence notification on Mech Eng notice board.
- Email announcement to Faculty, Graduate Students, and Postdoctoral Fellows.
- Complete the following and provide them to the Chair of examination committee one day prior to defence.
  i. Report of Examining Committee for Master’s Thesis Examination-ORAL Defence
  ii. Report of Examining Committee on Master’s Thesis
  iii. Licence to McMaster University
  iv. Master’s Thesis – Final Submission Sheet
- Complete the following forms and provide them to the Supervisor one day prior to defence.
  v. NSERC Appendix D (Form 100)
  vi. Department Exit Checklist

Chair of Examining Committee:
- Return the following completed forms to the Graduate Administrator:
  i. Report of Examining Committee for Master’s Thesis Examination-ORAL Defence
  ii. Report of Examining Committee on Master’s Thesis
  iii. Licence to McMaster University

Student:
- After approval of the defence committee, the student will distribute the thesis to the examining committee, normally at 14 days, but no later than 10 days, before the defence date. Submissions later than 10 days before the defence date shall require consent of all members of the defence committee.
- Return the following completed forms to the Mechanical Engineering Department
  i. NSERC Appendix D (Form 100)
  ii. Department Exit Checklist
- Please review the SGS Final Submission – Final Thesis Checklist: https://gs.mcmaster.ca/sites/default/files/resources/ final_submission_sheet.doc

Convocation:
Detailed information regarding convocation, including deadlines and the timing of ceremonies is available on the Office of the Registrar's website: http://registrar.mcmaster.ca/category/grad/. Please review the checklist items.
# Mechanical Engineering

## Approval of M.A.Sc. Defence Examination Committee

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Student Number</th>
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</table>

**Title of Thesis:**

**Date of Defence:**

**Time:**

**Location:**

**Examination Committee:**

- Committee Chair:
- Member:
- Supervisor:
- Co-Supervisor (if applicable):

Return completed form to the Graduate Program Administrator

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**Approval of M.A.Sc. Defence Examination Committee:**

<table>
<thead>
<tr>
<th>Associate Chair (Graduate Studies)</th>
<th>Date</th>
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</table>
DOCTOR OF PHILOSOPHY (Ph.D.)

1. **Program Requirements**

   **Program Start Prior to September 1, 2015:** Four half courses, at the 700 level, are the minimum required beyond the Master’s degree. Only courses taught in the Departments of the School of Engineering and Applied Sciences (listed here: [http://www.eng.mcmaster.ca/departments.html](http://www.eng.mcmaster.ca/departments.html)) count towards the minimum course requirement, unless permitted by the Department and the School of Graduate Studies.

   **Program Start Date September 1, 2015 and onwards:** Two half courses at the 700 level are the minimum required courses beyond the Master’s degree. Only courses taught in the Departments of the School of Engineering and Applied Sciences (listed here: [http://www.eng.mcmaster.ca/departments.html](http://www.eng.mcmaster.ca/departments.html)) count towards the minimum course requirement, unless permitted by the Department and the School of Graduate Studies.

   Entering graduate students in Masters or Doctoral programs within the Faculty of Engineering are required to complete a career planning exercise within their first academic year (September to August). Student will book through their department a planning session with a career specialist within the faculty and subsequently produce a report before the end of their first year. The report should not exceed 2 pages and must be submitted to the department’s graduate advisor before the end of August in their first year. Students entering in May of a given year may choose to submit the report in the second academic year instead.

   Ph.D. candidates are required to pass a comprehensive examination designed to test their breadth of knowledge and ability to integrate ideas.

   A candidate must complete a thesis that embodies the results of original research and mature scholarship. The general requirements for the thesis and oral defence will apply.

   **Additional Program Requirements:**

   - **ME 758 “Graduate Seminars in Mechanical Engineering.”:** Mandatory annual registration in Mosaic for Term 1 and Term 2 of every academic session. Please visit the link for information at: ([http://mech.mcmaster.ca/events_seminars.html](http://mech.mcmaster.ca/events_seminars.html)).
   - **SGS 101 and SGS 201 (online courses):** Mandatory registration in Mosaic at the start of a student’s program only. Must pass and abide by these online SGS courses. Connect to Avenue to Learn to complete these online courses at: ([http://avenue.mcmaster.ca/](http://avenue.mcmaster.ca/)).
   - **Job Hazard Analysis (JHA) form** (see [http://jhaweb.mcmaster.ca/](http://jhaweb.mcmaster.ca/)): Must complete a job hazard analysis (JHA) form with your supervisor and read and follow the appropriate Standard Operating Procedures (SOPs). Note: In the context of safety all graduate students are considered “workers”.

   - **Core Health and Safety courses:** Must successfully complete and abide by the following core health and safety courses (available online here: [http://www.workingatmcmaster.ca/eohss/training/](http://www.workingatmcmaster.ca/eohss/training/)):
     - Health and Safety Orientation
     - Asbestos Awareness
     - Ergonomics
     - Fire Safety
2. **Supervision**

Supervision of Ph.D. students is governed by the School of Graduate Studies regulations as outlined in the graduate calendar.

As soon as possible, and not later than 9 (nine) months after commencing doctoral studies, a Supervisory Committee for the student shall be approved by the Department Chair or his/her delegate, on the recommendation of the supervisor and in consultation with the student.

The Supervisory Committee will normally consist of at least 3 (three) members (4 members in the case of co-supervision). One member, whose scholarly interests include the area of the student’s main interest, will normally be from outside the department if a suitable individual is available. Another member may be from outside the university with departmental approval and permission of the Dean of School of Graduate Studies.

3. **Supervisory Committee Meetings**

The Ph.D. student’s Supervisory Committee shall meet with the student at least once a year between the dates of September 1st and August 31st of the following year. At each meeting, the student shall prepare a 5 – 10 page progress report to be given to the committee members at least one week in advance of the meeting. At each meeting, the student shall give a short 20 – 25 minute presentation of his/her research progress, entertaining questions from committee members. Subsequent meetings shall be held to monitor progress towards the comprehensive exam as well as the completion of the thesis.
Mechanical Engineering
Ph.D. Supervisory Committee Approval Form

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Student Number</th>
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Title of Report (Tentative):

Proposed Committee:
Supervisor:
Co-Supervisor (if applicable):
Member:
Additional Member who has scholarly interest in candidate’s specialization:

Return completed form to the Graduate Program Administrator

Approval of Ph.D. Committee:

<table>
<thead>
<tr>
<th>Associate Chair (Graduate Studies)</th>
<th>Date</th>
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</table>

September 2017
Ph.D. Supervisory Committee Meeting Procedures

Supervisor:
- Set up date and time of Ph.D. supervisory committee meeting in consultation with student and other members of the committee.
- Check room availability and send email confirming supervisory committee meeting to student and other members of the committee, including date, time and room location.
- Inform Graduate Program Administrator by email or using the optional form.

Student
- Download supervisory committee form from SGS website and fill in particulars, including page 2: “progress since last committee meeting” section and circulate to committee members with any additional material one week prior to committee meeting.
- Provide one additional signed copy of the form to Supervisor for completion at the end of the supervisory committee meeting.
# Mechanical Engineering

**Ph.D. Annual Committee Meeting Notification (optional form)**

<table>
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<tr>
<th>Student Name</th>
<th>Student Number</th>
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**Title of Report:**

**Date of Supervisor Committee Meeting:**

**Time:**

**Location:**

**Examination Committee:**

<table>
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<th>Role</th>
<th>Name</th>
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<tr>
<td>Supervisor:</td>
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<tr>
<td>Co-Supervisor (if applicable):</td>
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<tr>
<td>Member:</td>
<td></td>
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<tr>
<td>Additional Member who has scholarly interest in candidate’s specialization:</td>
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</tbody>
</table>

**Department Approval**

<table>
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<tr>
<th>Associate Chair (Graduate Studies)</th>
<th>Date</th>
</tr>
</thead>
</table>
PhD SUPERVISORY COMMITTEE MEETING REPORT

to the School of Graduate Studies

Student ID# ____________________________ First Name ____________________________  Family Name ____________________________

Program

Date student began PhD studies at McMaster: ____________________________
Date format: YYYY-MM-DD

Date of last Supervisory Meeting: ____________________________

Every Ph.D. student must have a Ph.D. Supervisory Committee meeting at least once every academic year (between September 1st and the following August 31st). This report must be received by the School of Graduate Studies within two weeks of the end of the academic year.***

COMPREHENSIVE REQUIREMENT

The School of Graduate Studies Calendar states that the Comprehensive Examination for full-time students will normally have taken place between 12 and 20 months from commencement of PhD studies with an upper limit of 24 months.

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<tr>
<th>Date Of Completion</th>
<th>Expected date of completion</th>
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RESEARCH ETHICS APPROVALS (http://www.mcmaster.ca/ors/ethics/faculty_intro.htm)

Does research involve human participants, their records or tissues? YES □ NO □
If yes, has approval been obtained from the research ethics board? YES □ NO □

Does research involve animals or their tissues? YES □ NO □
If yes, has approval been obtained from the research ethics board? YES □ NO □

FIELD TRIPS (http://www.workingatmcmaster.ca/link.php?link=eohss%3Aeohss-events-electives)

Does research involve international travel, which poses an identifiable additional risk under the university’s risk management policy? YES □ NO □
If yes, has student completed risk management forms and obtained approval? YES □ NO □

*** Clarifications regarding timing of the meeting and report:
1) Students who began their Ph.D. studies in January or May must complete have held their first Ph.D. supervisory committee meeting within the first 12 months of their program.
2) The deadline for a Ph.D. supervisory committee meeting for a student who has been on leave is extended by the duration of the leave beyond the nominal deadline.
3) Part-time students, like full-time students, are required to have Ph.D. supervisory committee meetings at least once during the academic year.
4) Normal deadlines apply for students who have been granted full-time off-campus status during part or all of the academic year.
<table>
<thead>
<tr>
<th>Student ID#</th>
<th>First Name</th>
<th>Family Name</th>
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</thead>
</table>

**TO BE COMPLETED BY THE STUDENT and SUBMITTED FOR THE COMMITTEE MEETING**

Details of progress made since the last report (or toward meeting degree requirements since beginning the program if this is the first report), i.e., courses completed, comprehensive examination preparation/writing/oral defense, thesis proposal, research, chapters written/revised, conference presentations, publications:

<table>
<thead>
<tr>
<th>Student signature:</th>
<th>Date:</th>
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</table>

**Supervisory Committee Members:** Initial below to affirm that you have read the student’s report on this page.

Supervisor: 
Committee Member: 
Committee Member: 
Committee Member: 
Committee Member: 

September 2017
Part A: Progress
Progress made in accomplishing goals set out in last report (or toward meeting degree requirements since beginning the program if this is the first report):
(i.e., courses completed, comprehensive examination preparation/writing/oral defense, thesis proposal, research, chapters written/revised, conference presentations, publications).

Committee’s report: This section contains the assessment and recommendations of the supervisory committee

Part B Goals
Specific goals for the next interval of ____ months (attach an additional page if necessary):

Anticipated date for the completion of degree requirements:  Date:

Part C Areas for improvement and additional direction:
**Committee's Assessment**
Evaluation of overall progress at this stage in the degree development during the interval since beginning Ph.D. studies (if this is the first Committee meeting) or since the last Ph.D. Supervisory Committee meeting:

**RATING**

[E] Excellent
The student has exceeded expectations in terms of academic and/or research progress. This rating may reflect exceptional initiatives taken by the student to address unexpected challenges in their course of study.

[G] Good
The student is meeting and achieving all expectations in terms of academic and/or research progress. There are no areas of concern with respect to meeting goals and milestones for research and academic progress. This rating is to be used for students who show promise for completing the degree in a timely manner.

[S] Satisfactory
The student is meeting and achieving most expectations in terms of academic and/or research progress. There is some concern around the pace and/or the meeting of goals and milestones for research and academic progress. The committee has some concerns with the student’s skills growth and subject area expertise. This rating is to be used when the committee identifies areas for improvement and where some expectations at this stage of degree development are not being met. Details about concerns should be provided in Part C.

[M] Marginal*
The student is meeting and achieving some expectations in terms of academic and/or research progress. There is significant concern around the pace and/or the meeting of goals and milestones for research and academic progress. The committee has significant concerns with the student’s skill growth and subject area expertise. This rating is to be used when the committee identifies several areas for improvement and where significant expectations at this stage of degree development are not being met. Areas for improvement should be provided in Part C.

[U] Unsatisfactory*
There is an unreasonably low rate of academic and/or research progress. The committee has serious concerns about the pace and/or the meeting of goals and milestones for research and academic progress, and whether these goals can be achieved in a reasonable period of time. Areas of serious concern should be provided in Part C. In cases where this category is used, the program should determine whether the student should be required to withdraw or be allowed to continue in the program until their next committee meeting.

*Where progress is deemed marginal or unsatisfactory, attach a detailed explanation of what must be accomplished over the next 6 months in order to remedy the situation.

<table>
<thead>
<tr>
<th>Print Name</th>
<th>Email address (McMaster if available)</th>
<th>Rating</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor</td>
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<td>_____</td>
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<tr>
<td>2nd Member</td>
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<td>3rd Member</td>
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<td>4th Member</td>
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This completed report has been seen by me.

Student’s Signature: ____________________________ Date: __________

Department Chair’s Signature: ____________________________ Date: __________

The student may append additional comments. A student who thinks that s/he is receiving unsatisfactory supervision is urged to follow the recommended grievance procedure for the Department or Program and/or to contact the Department Graduate Advisor, Department/Program Chair, or the Associate Dean of Graduate Studies.
Ph.D. Comprehensive Examination

Purpose

The purpose of the comprehensive examination is to test the breadth of knowledge and maturity of approach over a range of topics that are both within and peripheral to the candidate’s discipline. The candidate’s level of achievement in this examination will determine possible academic background deficiencies that the candidate may have. Successful completion of the comprehensive examination is a necessary requirement for the candidate to continue in the program.

Timing

The student is expected to complete all requirements of the comprehensive examination within 20 months of first registration in the Ph.D. program, with an upper limit of 24 months. Special exceptions require the approval of the Department Chair or designate and the Graduate School. Part-time students must take the comprehensive examination by the end of the 36th month. Normally, course requirements will be completed before the Comprehensive Exam, but this is not a requirement. Likewise, preliminary research results are not required, but the student is expected to present and defend a viable research proposal including anticipated new contributions to the existing scientific literature. It is the responsibility of the Supervisor to recommend and notify the Departmental Graduate Administrator, at least two months in advance, that a candidate will take the examination. In consultation with the supervisory committee, the supervisor nominates a comprehensive examination committee and submits the nomination for approval by the Department Chair or his/her designate. Once the committee is approved, it is the responsibility of the examination committee Chair to initiate and oversee all administrative arrangements of the examination, including the exact dates of the written and oral parts of the exam.

Structure of Examining Committee

The comprehensive Examination Committee shall consist of the Committee Chair, at least 3 (three) members of the Supervisory Committee, including the supervisor, and an additional member who has a scholarly interest in the candidate’s general area of specialization. At least one member of the Examination Committee must be from outside the department (other than the Chair or Co-Supervisor(s)).
Format of the Examination

The comprehensive examination will consist of two parts, which are outlined below.

Part A: Breadth and Depth of Knowledge

The objective of this part of the exam is to test the candidate’s comprehension as well as breadth and depth of knowledge of his/her discipline area, normally at the senior undergraduate/junior graduate level. Although the written exam focuses primarily on the candidate’s understanding of fundamental concepts in two technical areas related to his/her research topic, the scope of the oral part extends to examining the depth of knowledge in the candidate’s discipline area and possible deficiencies in his/her academic background. The chart below describes the timeline that should be followed.

| At least 7 weeks before oral part of the exam | Meeting of examination committee takes place to discuss comprehensive exam. The committee will decide two subject areas in which candidate will be examined on, and decide which two committee members will write the two questions that will be given to the student. |
| 6 weeks before the oral part of the exam | Written notice of the two subject areas and dates of the written and oral parts of the exam must be provided to the student, as well as a notification to examination committee members indicating/confirming same. The examination notice to the student must also include the names of the examination committee members. |
| At least two weeks before the written part of the exam | The two committee members preparing the written questions will circulate the questions to the exam committee. The chair of the committee will seek feedback from the exam committee and reach consensus on the two questions. |
| At least one week before the written part of exam | The Chair of the comprehensive exam committee submits questions to the Graduate Program Administrator for preparing in standard format. |
| Day of written part exam | Student to pick up questions from Graduate Program Administrator and return answers within 7 hours. Copies of answers to the 2 questions will be distributed to comprehensive examination committee. |
| Day of oral part exam (one week after the written exam) | In the oral part of the exam, the candidate is free to choose whether to start with Part A (the two questions) or Part B (the research proposal). To initiate the questions for Part A of the examination, the candidate should provide a brief synopsis (maximum of 5 minutes) of his/her answers to the two written questions. |
Part B: Research Proposal

The candidate shall submit a report on the research program: **up to a maximum of 40 pages in length, INCLUDING all figures, graphs, illustrations, tables and appendices (but not including the list of references)**. The report should be typed double-spaced; 12 point Times New Roman; one inch margins on all sides. **IF THE REPORT DOES NOT CONFORM WITH THESE GUIDELINES, IT MAY BE RETURNED TO THE CANDIDATE FOR REVISION AND CAN RESULT IN DELAYING THE EXAMINATION SCHEDULE.**

The report must include: (i) a **critical** survey of the directly related literature in the field; (ii) an outline of the proposed research program including its justification, the approach to be taken, specific analytical or experimental methods, perceived or anticipated problems, preliminary results (if available); (iii) an account of expected contributions the proposed research will bring to the existing scientific literature; and (iv) a proposed timetable to accomplish the task. A copy of the report must be made available to each member of the Examination Committee at least two weeks prior to the date of the oral examination.

| At least two weeks before oral part of the exam | Copies of research proposal to be submitted to the Graduate Program Administrator by student for distribution to the examination committee. |
| Day of oral exam (one week after the written exam) | Part B of the oral exam will be approximately 1.5 hours. The candidate will be required to present his/her proposal in a summary fashion (20 minutes) to the committee followed by questions directly related to the proposal and the candidate’s specific area of research. |

**Examination Result**

- The candidate’s achievement in each of the parts shall be judged as: Pass or Fail.
- **The candidate must pass both parts to successfully complete the comprehensive exam.**
- The committee chair shall communicate the result of the examination to the department chair, who shall communicate the result of the examination, in writing, to the student.
- **Should the candidate fail either or both parts, he/she may request a re-examination. The re-examination will follow the same format as outlined above, and must be completed within six months of the first examination.** The candidate will be allowed only one re-examination.


- Please review the SGS Final Submission – Final Thesis Checklist: [https://gs.mcmaster.ca/sites/default/files/resources/final_submission_sheet.doc](https://gs.mcmaster.ca/sites/default/files/resources/final_submission_sheet.doc)

**Convocation:**

Detailed information regarding convocation, including deadlines and the timing of ceremonies is available on the Office of the Registrar's website: [http://registrar.mcmaster.ca/category/grad/](http://registrar.mcmaster.ca/category/grad/). Please review the checklist items.
Ph.D. Comprehensive Examination – Procedures and Timeline

Supervisor:
- Set up the examination committee and give notification of committee to Graduate Program Administrator for approval by Dept. Chair/Grad Advisor on attached form. (7 weeks before oral exam).
- Setup the organizational meeting of the examining committee.

Chair of the examination committee:
- During the organizational meeting, finalize date and time of written and oral examinations (6 weeks before oral exam).
- Check room availability and email all members of the examination committee confirming examination, including date, time and location.
- Provide information to Graduate Program Administrator, including committee members, 2 examiners that will set the written questions, dates of written and oral exams, areas of study of examination questions in the form attached (6 weeks before the oral exam).
- Send email reminder to committee at least two weeks before written exam, especially requesting written questions.
- Circulate questions to committee members once received from the examiners
- Send finalized questions to Graduate Program Administrator (at least one week before the written exam).
- Oral Exam – to be scheduled one week after the written exam.

Examiners setting the written questions:
- Send questions to Chair (at least two weeks before the written exam)
- Be available (by phone if not in person) during the written part of the exam in case the student needs some clarification on the question.

Graduate Program Administrator:
- Get approval of examination committee from Dept. Chair/Grad. Advisor.
- Give the timeline/information letter with the subject areas to the student (6 weeks before the oral exam)
- Two weeks before the oral examination, collect from the student and handout the research proposal to the examination committee.
- Prepare the exam questions once received from the Chair in the Department examination format.
- Handout exam questions to the student on the day of the written exam.
- Collect the answers to the written exam questions from student on the date of the written exam.
- Circulate the student’s report and answers to exam questions to the examination committee.
- Prepare the (oral) examination result form and give to the Chair (1 day before the oral exam)
- The completed result form is submitted to the School of Graduate Studies so that the student’s academic record will show the completion of this milestone.
- Provide the student with a written letter of the result of the PhD Comprehensive Examination.(if the student does not pass, please refer to the process on page 13 of this document titled, “Examination Result”
## Mechanical Engineering

### Approval of Ph.D. Comprehensive Examination Committee

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Student Number</th>
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**Ph.D. Comprehensive Examination Committee:**

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<th>Member, Chair:</th>
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<tr>
<td>Additional Member who has scholarly interest in candidate’s specialization:</td>
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<td>Supervisory Committee Member:</td>
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<td>Supervisory Committee Member:</td>
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<td>Supervisor:</td>
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<td>Co-Supervisor (if applicable):</td>
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Return completed form to the Graduate Program Administrator

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<th>Approval of Ph.D. Comprehensive Examination Committee:</th>
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<tr>
<td>Mechanical Engineering Associate Chair (Graduate Studies)</td>
<td>Date</td>
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**Mechanical Engineering**

**Ph.D. Comprehensive Examination – Examination Committee Form**

<table>
<thead>
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<th>Written Examination Date:</th>
<th>Oral Examination Date:</th>
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<tr>
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<td>1 week after written exam</td>
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<td>Time:</td>
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<td>Location:</td>
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**Written Questions due to Chair:**

**Student Report due to Mech Eng Office:**

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<th>Written Question Examiners:</th>
<th>Subject Area</th>
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**Examination Committee:**

| 1) Chair: | | |
| 2) Additional Member who has scholarly interest in candidate’s specialization: | | |
| 3) Supervisory Committee Member: | | |
| 4) Supervisory Committee Member: | | |
| 5) Supervisor: | | |
| 6) Co-Supervisor (if applicable): | | |

Return completed form to the Graduate Program Administrator