

Regulations for the Software Engineering M.A.Sc. Program

Department of Computing and Software
McMaster University

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1 Introduction

This document contains the regulations for the M.A.Sc. program in Software Engineering at McMaster University. It supplements, but does not supersede, the general regulations for Master's programs at McMaster University given in the *School of Graduate Studies Calendar*.

M.A.Sc. students must successfully complete the equivalent of four one-term graduate courses and prepare and successfully defend an M.A.Sc. thesis.

2 Admission policy and admission standards

Applicants may be admitted to the M.A.Sc. program in Software Engineering if they have the equivalent of a B.Eng. in Software Engineering with at least a B⁺ average from McMaster University.

In very general and broad terms, applicants are expected to have covered the following subjects in five fundamental areas:

1. Mathematics:
 - a. Calculus 1, 2 and 3.
 - b. Scientific computation.
 - c. Linear algebra.
 - d. Introduction to discrete mathematics and predicate logic.
2. Basic Computer Science:
 - a. Introduction to programming.
 - b. Data structures.
 - c. Concurrent systems and operating systems.
3. Software Design and Documentation:
 - a. Specification and requirements.
 - b. Software design.
4. Engineering:
 - a. Controls.
 - b. Digital electronics.
5. Basic Science:

- a. Physics.
- b. Chemistry or Biology.

The Admission Authority¹ determines if any action is needed to bring a candidate's Software Engineering knowledge to a reasonable level, and may require a candidate to take additional courses, see item 5 in Section 3 below.

3 Course requirements

Graduate courses in the Dept. of Computing and Software are grouped in three categories, i) Theory of computation and mathematics of computing (**Theory**), ii) Software and its engineering (**Software**), and iii) Computer systems and applications (**Systems**). Categorization of existing courses (See Table in Appendix A).

All students must successfully complete the equivalent of four one-term graduate courses² in Software Engineering, Computer Science, or relevant areas such as Electrical and Computer Engineering or Mathematics. Among the four required courses,

1. Two (2) Software courses
2. One (1) course from Theory
3. One (1) course from System
4. One (1) of the non-Software courses may be substituted by a graduate course from outside the department subject to the approval of the students thesis advisor and the graduate advisor
5. At most one 600-level course
6. If requested by the Admission Authority (for candidates not fulfilling all the prescribed requirements for admission), or if the Supervisor identifies a deficiency, a student may be required to take additional courses, usually PUCs³, to supplement their education.

In such cases the number of additional courses should normally be at most two, in some very exceptional cases at most 4. A PUC may be replaced, when appropriate, by a PGC⁴.

7. The student, with the approval of the Supervisor, proposes the course selection for approval by the Department Chair or delegate.
8. Outstanding M.A.Sc. students may be allowed to transfer to a Ph.D. program of the Department when they complete their course requirements with at least an A- average and demonstrate exceptional progress in their research project. Transfer procedures are determined by the respective Ph.D. programs.

4 Thesis requirement

The thesis must contain *independent novel work* that contributes to the field of Software Engineering. The thesis must report a substantial body of work that demonstrates scholarly competence and understanding of state-of-the-art literature in the subject area.

To present a complete thesis to the Supervisor is the student's responsibility.

¹The person or body responsible for making admission recommendations to the School of Graduate Studies.

²A "one-term course" is a "half course" in the official McMaster terminology.

³A PUC is a *Prescribed Undergraduate Course* that is required as part of a student's degree.

⁴A PGC is a *Prescribed Graduate Course* that is required as part of a student's degree. A PGC may be a prescribed course that either is included among or is additional to the normal number of required courses.

The Supervisor must evaluate the thesis without unreasonable delay, but in any case within a two-month period, and request the necessary improvements.

The Supervisor will certify in writing that the thesis meets the customary standards. Only then will the thesis be submitted to the Examination Committee and the thesis defense scheduled.

5 The Examination Committee

When the M.A.Sc. thesis is ready to submit for defense, the student's supervisor makes a proposal for the Examination Committee.

1. The Committee consists of the Supervisor(s) and at least two additional faculty members.
2. At least one committee member besides the supervisor(s) must be a regular⁵ member of the Department of Computing and Software.
3. The Supervisor verifies that the members proposed are willing and able to serve on the Examination Committee.
4. The Software Engineering Graduate Advisor approves or modifies the composition of the Examination Committee and nominates the Chair of the Committee.
5. The Chair of the Examination Committee may not be the Supervisor.

6 The M.A.Sc. thesis defense

The student presents and defends his/her thesis. The Examination Committee evaluates both the scientific merit and presentation of the thesis and decides about awarding the degree to the candidate.

1. The student must give a public seminar on his/her thesis research at least four weeks prior to the desired defense date. Copies of the thesis must be distributed to the members of the Thesis Examination Committee prior to the seminar. Members of the Thesis Examination Committee are expected to attend the seminar. The seminar normally lasts 60 minutes (including questions from the public).
2. On the basis of the thesis contents and the seminar, the Thesis Examination Committee decides whether the thesis is ready for defense. This decision must be made within two weeks of the public seminar. If the decision is to withhold approval, comments must be provided to aid in a revision.
3. Once the student has addressed the committee's concerns, the thesis is again considered by the committee. This procedure is repeated until approval is given. In the event of a disagreement between the student and the Thesis Examination committee, the case may be referred to the Chair for resolution.
4. The defense is open to all interested individuals.
5. The student first gives a 15 minute summary of their work.
6. The audience and members of the Examination Committee ask questions about the material presented in the thesis, related issues, the impact of the results and future research.
7. The defense normally takes no more than 90 minutes.
8. The Examination Committee evaluates the student's performance and determines whether or not the requirements for the M.A.Sc. degree have been met in a closed meeting after the student has left the room.

⁵This includes Professors Emeriti but not Associate members.

7 Timing for full-time students

1. Normally the Supervisor is named when the student enters the program. With the approval of the Chair or delegate, more than one faculty member may jointly act as the Supervisor.
2. Fully funded students having prestigious scholarships from government or international agencies (e.g., NSERC) might be admitted without having a supervisor at admission. In case no supervisor is named at admission, the Software Engineering Graduate Advisor acts as nominal supervisor. The actual supervisor must be named not later than 6 months after the student's arrival.
3. Students normally will take at least two one-term courses in each of the first two terms.
4. The required four courses must be completed successfully within 16 months after starting the program. When PUCs are required, the time window might stretch until 20 months.
5. The Examination Committee should be named at least one month before the defense.
6. The final version of the thesis must be submitted to the Department's Administrative Coordinator or delegate at least two weeks before the date of the defense. The student must provide a copy of the thesis for the Department and each member of the Examination Committee. The Department will keep its copy until it receives the official bound version of the thesis.
7. The thesis should normally be completed and defended within 20 months; however, funding may continue up to a total of 24 months at the Supervisor's discretion.

8 Timing for part-time students

1. The Supervisor is named when the student enters the program. With the approval of the Chair or delegate, more than one faculty member may jointly act as the Supervisor.
2. Students normally will take at least two one-term courses in each of the first two academic years.
3. The required four courses must be completed successfully within 28 months after starting the program. When PUCs are required, the time window might stretch until 32 months.
4. The Examination Committee should be named at least one month before the defense.
5. The final version of the thesis must be submitted to the Department's Administrative Coordinator or delegate at least two weeks before the date of the defense. The student must provide a copy of the thesis for the Department and each member of the Examination Committee. The Department will keep its copy until it receives the official bound version of the thesis.
6. The thesis should normally be completed and defended within 36 months after starting the program.

A Categorization of Graduate Courses

Graduate courses in the Dept. of Computing and Software are grouped in three categories, Theory of computation and mathematics of computing (**Theory**), Software and its engineering (**Software**), Computer systems and applications (**Systems**). The rationale of the categorization is to train well-rounded graduate students in Computer Science and Software Engineering with sufficient breadth in their knowledge. The categorization roughly follows the ACM Computing Classification System. Note that the following list is subject to changes due to removal and addition of courses.

Category	Courses
Theory	6E03, 6O03, 6TE3, 701, 702, 705, 706, 708, 722, 734, 736, 744, 746, 749, 758, 769, 770, 781
Software	6HC3, 703, 704, 707, 724, 725, 733, 738, 741a 743,, 745, 753, 757, 761, 766
System	6WW3, 6F03, 6TB3, 6GA3, 6GC3, 748, 750, 764, 765, 766, 767, 771, 772