Policies and Procedures
M.Cog.Sc. – Thesis Stream

The research, which forms the M.Cog.Sc. Thesis in the Department will, in many cases, involve two (or more) distinct methodologies of cognitive research (e.g., experimental, conceptual, computational, theoretical). The thesis will also have a distinct content focus that may cross-disciplinary boundaries (e.g., language, categorization, visualization) or ideally, be truly interdisciplinary. In all cases, the student will have achieved a level of expertise consistent with a disciplinary M.Cog.Sc. Candidate in a least one specific domain. The level of interdisciplinary expertise will depend upon the topic and the scope of the research activity.

M.Cog.Sc. Proposal Meeting

Before the student embarks on the major research activities that will become the thesis, he or she should, in consultation with their research supervisor, recruit a supervisory committee. The committee should be constituted when the student is prepared to formulate a plan for the coming years. **Some research may already have been completed, but the bulk of the work is still in the future.**

Purpose: As part of their degree requirement, students in the Thesis Stream of the Masters of Cognitive Science (M.Cog.Sc.) program are required to have a meeting with their Thesis Committee by end of their 3rd term of full-time study. The primary function of the committee meeting is to specify clearly the package of research activities, which, if completed and written up into a dissertation, will satisfy the students' M.Cog.Sc. thesis requirements. The outcome from the committee meeting (either approval or required revisions) is an agreement between the student and the university: once approved, if the student successfully completes the work described by the student at the   meeting and writes it up appropriately, he or she can expect to receive the degree (assuming all other requirements for the degree have been completed). Once the plan presented at the meeting is approved, the student then does the research described at the meeting and writes the dissertation.

Although the only *formal* requirement for the supervisory committee before the final defense is to participate in the committee meeting, it is STRONGLY RECOMMENDED that the committee have a more active role in the conceptualization and progress of the thesis research program.

When does the meeting take place? For full-time students, the meeting must take place no later than Oct. 1st of the second year in the program. For example, if a student began the M.Cog.Sc. in September 2013, she is required to have had this meeting by Oct. 1st, 2014. For part-time students, the deadline is by Oct. 1st of the 3rd year (in the above example, by Oct. 1st, 2016).

What has to be prepared before the Proposal Meeting? If the Thesis Supervisor(s) require(s) it, students will have to prepare a written document to be circulated among the Committee members at least two weeks in advance of the meeting (this time may be reduced if all Committee members agree). The nature of the written document, if one is required, will be decided in consultation with the Thesis Supervisor(s).

What happens during the Proposal Meeting? At the discretion of their supervisor(s) and other committee members, students may be required to begin this meeting with a brief (15 – 20 minute) presentation. During the presentation, students will make clear the purpose of the proposed work, provide a brief background of the relevant issue(s), present their hypotheses and their methods (as applicable), and the significance of the proposed work. Following this presentation, the students and the committee members will engage in a discussion about the proposed work. This may take the form of a one-on-one question round with the student (followed by a group discussion), or it may be an informal group discussion.

What is the outcome from the Proposal Meeting? At the end of the Meeting, students will be asked to leave the room briefly to allow the committee members to discuss the feedback that will be given to them. The committee will assign a grade of 'Approved – As Is', 'Approved – With Revisions', or 'Not Approved'. If the committee assigns a grade of either 'Approved – With Revisions' or 'Not Approved', the student will receive some indication of the types of changes required. In addition, within 1 week of the meeting, the student will also receive a written list of the required changes (which has been agreed upon by the committee). The grade from the meeting and a copy of the required changes (if any) will be placed in the student's file. If the grade assigned is 'Not Approved', then there will need to be a second Proposal Meeting after the required changes have been made.

The Supervisory Committee

The supervisory committee consists of (at least) two individuals, the supervisor/co-supervisors and at least one other faculty members with expertise in the topic of the thesis that enhances or complements that of the supervisor.

Supervisor: You can have a single supervisor, or two co-supervisors.

a) Single Supervisor – a faculty member who is cross- or fully-appointed to the Department, who has the expertise necessary to supervise the research activities of the M.Cog.Sc. candidate. The supervisor has the responsibility of providing guidance and support for the academic aspects of the thesis.

<u>or</u>

b) Co-supervisors – there are two situations in which a student might have co-supervisors.

1. *Two supervisors who are both faculty members at Carleton.* These supervisors share responsibility for the progress of the student's research. Presumably, these individuals are co-supervisors because their expertise is complementary and thus both are heavily involved in the supervisory process. Otherwise, it would be likely that one of these individuals was the supervisor and the other was a committee member, so as not to unnecessarily complicate the progress of the thesis research.

2. One supervisor is an adjunct research professor (i.e., is not employed by Carleton) and the other supervisor is a faculty member employed by Carleton. The co-supervisors may share responsibility for the academic progress of the thesis or the external co-supervisor may have the primary academic expertise. **The internal co-supervisor must be a faculty member who is cross- or fully-appointed to the Department.** Typically, a student who has an external co-supervisor will have discussed the situation with their internal faculty supervisor, who most likely has a research based relationship with the external supervisor. The Graduate Supervisor should be kept informed as soon and as often as possible about any changes in the student's cosupervisory situation**.** Along with some responsibility for the academic aspects of the thesis, the internal co-supervisor is responsible for the practical and administrative progress of the student, as well as their acculturation to the program. Ideally, the internal co-supervisor will have some significant level of expertise in the area of the student's research although this will depend on the area. **The external co-supervisor must have adjunct research professor status at Carleton.** Obtaining adjunct status is not difficult for individuals who are appointed to another university, or who have a significant research program (if they work in government or industry). Adjunct professors are typically sponsored by a Carleton faculty member and often that sponsor would be the internal co-supervisor. **The Department will assume that the co- supervisors can provide support for the proposed project, including any equipment, space, and possibly funds that are necessary for the research to be successfully implemented.**

Committee member(s): In addition to a Supervisor/Co-Supervisors, you will need at least one committee member.

Committee member(s) – at least one additional committee member is required for the M.Cog.Sc. Supervisory committee in the Department. This committee member typically is cross- or fully-appointed to the Department. If the prospective committee member does not have an appointment in the Department, then approval of the Graduate Supervisor is required. Ideally, if the student's project involves

two (or more) distinct methodologies and the supervisor is an expert in only one of these, then one committee member should be an expert in the alternative methodology(ies).

Responsibilities of the Supervisor

The Faculty of Graduate Studies has developed guidelines for supervision. Minimally, it is assumed that the supervisor can and will provide the expertise that will allow the student to successfully implement the research program. **Supervisors are discouraged from supervising projects for which they do not have sufficient expertise.** Students should be encouraged to select appropriate areas of research so that they will benefit from the supervisors' knowledge and facilities, as well as from interactions with other students who have the same supervisor.

Supervisors are expected to meet with students on a regular basis and to be available for consultation even when they are away for extended periods (e.g., in the summer if they are away doing field work or when on sabbatical). In laboratory based research, this may take the form of weekly lab meetings and individual meetings, as needed. Opportunities for interaction should be encouraged. Students should have the opportunity to present and discuss their work in small group settings (lab meetings or informal groups), in departmental colloquia, at local and national/international conferences. Second year M.Cog.Sc. students are required to make a presentation each year at the Annual Cognitive Science Spring Conference. Posters that were or will be presented at conferences are welcome in this venue. Supervisors who have SSHRC, CIHR, or NSERC grants are expected to provide support from their research grants in the form of research assistantships, and to provide funding for conferences unless the topic of the students' research is demonstrably different from that of the supervisor. NSERC and SSHRC typically expect that students will be involved in the research activities of their supervisors.

Responsibilities of the Student

Similarly, the Faculty of Graduate Studies specifies the responsibilities of the student. Students are expected to communicate with their supervisors, to participate in jointly-agreed upon research activities, to carry through on research assistantship duties, and in general, to participate in the scholarly activity of the Department more generally (e.g., attend colloquia, serve on departmental committees, provide support for other students through knowledge sharing etc.). Students are expected to be on campus or in touch with their supervisors on a regular basis, and to provide verbal or written updates of their progress. Students also need to balance course work requirements with research activities. Research should form at least 50% of the students' workload across the degree. Even in the first year of the program, students should expect to be involved in research projects both in courses and with their supervisors and/or other faculty members in the Department.

M.Cog.Sc. Thesis

All theses should, in the first instance, conform to the guidelines presented by the Faculty of Graduate and Postdoctoral Affairs (FGPA).

The current document expands upon, but does not replace, those guidelines, which fully specify the formatting of the thesis with respect to issues such as spacing, pagination, margins etc. Hence, all thesis content, regardless of organization, is to be presented double spaced, with appropriate margins and so on, as decreed by the university. Reference and citation format should be selected to be appropriate for the dominating discipline. Most empirical theses in Cognitive Science use the format of the American Psychological Association, whereas computational theses and linguistic theses use alternative formats appropriate to their disciplines. Regardless of which format is adopted, it should be used consistently throughout the document.

Note that all Carleton University theses are available for viewing online through the library. The Department also has departmental copies, which are available for viewing.

THESES SHOULD BE IN FINAL FORMAT BEFORE THEY ARE SENT TO THE INTERNAL-EXTERNAL EXAMINER. Ideally, all of the regular committee members will have read and approved the thesis before it is submitted for the defense. Although this latter recommendation is not required by the university (which only requires approval of the supervisor), adherence would probably reduce stress and increase thesis quality.

Assume that the verdict will be 'accepted as submitted' and plan accordingly. The thesis should be in final form, including all tables of contents, references, appendices etc; it should be presented double-spaced, with the appropriate margins, with figures and tables embedded in the text. Anything less is an insult to the internal/external examiner. The one exception is that the acknowledgements page is usually not included in the version sent to the committee, as it will be finalized after the defense.

TAKE HOME MESSAGE – IT'S NOT A DRESS REHEARSAL!

Thesis Organization

The major guiding principles should be those of coherence and flow. The thesis should be readable as a complete document, with a beginning, middle, and end. The concluding section should satisfactorily

resolve the 'thesis' (i.e., hypothesis, question, goal) that is outlined in the introductory section. **In summary, the student's goal is to present a document that is coherent and readable as a connected whole.**

The M.Cog.Sc. thesis will consists of a series of chapters (Chapter 1, 2, … to Chapter N). Each Chapter follows sequentially from the one before and constitutes a major section, such as Introduction, Literature Review, Experiment 1, .. General Discussion, and so on (or other titles as appropriate). The traditional model in the humanities might resemble a book; in the social sciences the thesis may resemble an experimental journal article (though with different headings).

Thesis Length It is impossible to specify a length for a M.Cog.Sc. thesis, as length will be determined by a variety of factors. However, most traditional theses are at least 60 pages of text (not counting appendices etc). Some stretch to 150 or more pages. Length is of less importance than whether or not the student has addressed an interesting question and provided a reasonable attempt to answer that question. Students are encouraged to consult with their supervisor(s) for more guidelines.

Dissertation Defense

All dissertations are examined in an open oral examination. An internal/external examiner from a unit other than the one to which the supervisor belongs is appointed to the committee for the final defense. The oral examination is chaired by an individual appointed by the Department of Cognitive Science.

Timing

Overall, to complete the degree in two years, it is important for the student to become involved in the area of the thesis research within the first year, ideally within the first two terms. Any changes in topic or major direction will add more time. The writing process is necessarily iterative and thus typically takes longer than anticipated. Students who start earlier and write up their work along the way (e.g., as proceedings papers at conferences) will have more of the content written than students who leave the whole writing process to the end (so obviously, this latter approach is not recommended). It is much harder to write a really good thesis than one might think and thus, the sooner the process gets underway, the more likely it is to be done in good time. [Keep in mind that writing is thinking]. **It is also useful to keep in mind that the thesis (including the research, the written document, the steps along the way) is at least 50% of the work required for the degree – and possibly more.**

Hence, students who have completed all of their coursework are only about half-finished with degree requirements. Even if they have collected all necessary data and have started the analysis and writing process, they are likely to have 25-40% of the work of the degree still ahead of them.