Policies and Procedures

The Ph.D. Thesis

The research which forms the Ph.D. Thesis in the Institute 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 Ph.D. candidate in a least one specific domain. The level of interdisciplinary expertise will depend upon the topic and the scope of the research activity.

There are two major forms for the final written document. For most existing theses, the model was the typical one used in FASS at Carleton and other Canadian universities -- a series of chapters (e.g., Introduction, Theoretical Background, Experiments 1 – 4, Discussion, Conclusions). In other cases, however, the thesis has consisted of an overview section, and a series of publications (journal articles or Proceedings papers). This "articles" model is more typical in Sciences and in European universities. In the articles model, the overview summarizes and uses the content of the articles to present a 'thesis' and thus is like the Introduction + Discussion of the standard thesis. Normally, the student would be the first author on these papers. The supervisor and the student should discuss the potential form of the thesis before starting the program of research. The advantage of the articles model is that progress is more obvious. Students and supervisors are advised to consult examples of theses that can be obtained through the Carleton library. The Department also has a hard copy of each thesis.

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.**

The Supervisory Committee

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

Supervisor – a faculty member, typically cross- or fully-appointed to the Institute, who has the expertise necessary to supervise the research activities of the Ph.D. candidate. The supervisor has the responsibility of providing guidance and support for the academic aspects of the thesis.

Two *committee members* – two additional committee members are required for the Ph.D. supervisory committee in the Institute. At least one should be cross- or fully-appointed to the Institute. 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).

Co-supervisors – there are two situations in which a student might have co-supervisors. In both cases, two additional committee members are required for the supervisor committee and thus, the supervisory committee will consist of a minimum of four members.

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

cosupervisors 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 Institute.** Typically, a student who has an external cosupervisor 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 Institute 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.**

The Prospectus

The primary function of the prospectus is to specify clearly the package of research activities, which, if completed and written up into a dissertation, will satisfy the students' Ph.D. thesis requirements. The prospectus is an agreement between the student and the university: once approved, if the student successfully completes the work described by the prospectus 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 prospectus is approved, the student then does the research described in the prospectus and writes the dissertation.

The prospectus document itself is typically 40 to 60 pages. It is circulated to the committee two weeks before the scheduled prospectus defense. This defense should occur before the bulk of the research is completed but it may, and often will, include preliminary findings. The defense will be chaired either by a member of the graduate committee or the Director. The meeting will be conducted using the same format as will be used for the final defense thus serving the additional purpose of giving the student some practice with this sort of formal questioning.

The prospectus should provide a general background to the topic and to existing research. Any proposed empirical studies (especially the first one or two in a series) should be specified in enough detail for the committee to evaluate them accurately. The hypotheses to be addressed should be clearly listed in the prospectus document. It is quite reasonable to include already completed work in the document, however, the goal of the prospectus is to obtain a general agreement about the direction and scope of the research

required for the thesis. In some cases, the committee may reserve final judgment until some preliminary work is completed, suggest additional research, or even suggest a more limited scope than is proposed. The point of the prospectus is to help the student conceptualize and specify a program of work that is 'enough but not too much' for the dissertation requirement.

Although the only *formal* requirement for the supervisory committee before the final defense is to read the prospectus and participate in the prospectus defense, it is STRONGLY RECOMMENDED that the committee have a more active role in the conceptualization and progress of the thesis research program. A possible model for that process is shown in Table 1, with approximate timing.

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. The first and second year students are required to make a presentation each year at the Annual Cognitive Science Spring Conference and the upper year students are strongly encouraged to do so. 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 Institute 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 who have funding from the university are required to apply for external scholarships as long as they are eligible. Students also need to balance course work requirements with research activities. Research should form at least 50% of the students' work load 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 Institute.

Dissertation Defense

All dissertations are examined in an open oral examination. An external examiner and an internal examiner from a unit other than the one to which the supervisor belongs are appointed to the committee; the external examiner is a recognized expert in the subject of the dissertation. The external examiner prepares a written report at least two weeks before but NO LATER THAN ONE WEEK before the date set for the oral defense, allowing the dissertation to go forward for examination or not. The oral examination is chaired by an individual appointed by the Faculty of Graduate Studies and Research. [Consult the accompanying document about identifying an external examiner for more details of that process].

Timing

A model of the thesis 'process' is shown in Table 1. Overall, to complete the degree in four years, it is important for the student to become involved in the area of the thesis research within the first two years, ideally within the first year. It takes about three years, typically, for the process shown in Table 1, that is from the first specification of the supervisory committee to the final defence. Any changes in topic or major direction will add more time. To stay on track, the student should have defended the prospectus within a year of first setting up a supervisory committee, leaving a year for data collection (if any) and conceptualization, data analysis or development of models, and another year for writing. 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 are ABD (all but dissertation) 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.

Table 1. Recommended sequence for Ph.D. Thesis Research Progress (for a 4-year, 10 credit Ph.D.).

Event	Timing (recommended)	Description
Supervisory Committee Defined	Within the first year of the program (by *September of 2nd year)*	Supervisor and student agree on committee members; members are contacted and agree to serve
Initial research meeting (informal with committee – student presents tentative plan)	Shortly after committee defined (by *December of 2nd year*)	Student gets a chance to try out their ideas, present some pilot work (if already done), and benefits from committee's expertise
… subsequent meetings..	As required to provide student with sufficient guidance; could be in the form of departmental seminars, with committee members attending, or as lab meetings	Student should have some continued interaction with the committee members (the form may vary)
Prospectus Defence	***By end of 2nd year (e.g. August)***	**Program Requirement (formally scheduled meeting)**
Informal consultations/meetings with committee members (no limit, at least 1 or 2 recommended per year)	As required; again, could take the form of lab meetings or departmental seminars; a yearly progress update is minimal	To ensure project benefits maximally from committee expertise
Penultimate draft of document to committee	About 4 months before projected defence date (to allow for revisions and comments) – *Feb to March of 4th year of program*	Committee members may focus on different aspects of the thesis, especially if multiple methodologies are involved
Final version approved by Supervisor		
Intent to Submit	**8 weeks before the projected defense date, the candidate informs the Institute that he or she intends to submit the thesis for defense**	**University Requirement**
Final version [6 examinable copies] to Graduate Administrator	**6 weeks before projected defence date**	**University Requirement**
Final version circulated to committee, including external examiner	**4 weeks before scheduled defence**	**University Requirement**
Thesis Defence	**End of 4th year of program**	**University Requirement**

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