



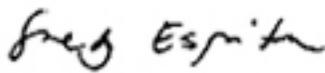
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June 16, 2011

To : Members of Graduate Council

From : 
Medy Espiritu
Assistant Secretary and SynApps System Administrator

The next meeting of Graduate Council will be held on **Wednesday, June 22, 2011 at 10:30 a.m.**
in **MUSC-311/313**.

Listed below are the agenda items for discussion.

Please email espirtu@mcmaster.ca or call extension 24204 if you are unable to attend the meeting.

A G E N D A

- I. Report from the Associate Deans of Graduate Studies
- II. New program: Master of Science in Health Science Education
- III. Proposed changes for the 2011-2012 Graduate Calendar
- IV. Other business



McMaster University

Program Proposal Brief of the

MASTER OF SCIENCE IN HEALTH SCIENCE EDUCATION

Submitted to the
Ontario Universities Council on Quality Assurance

January ____, 2012

MScHS Education program committee:
Dr. Denise Marshall, Dr. Mary Law and Dr. Kareen McCaughan

CONTENTS

INTRODUCTION	3
Objectives of the program	6
Admission Requirements	10
Structure	11
Program Content and Curriculum Design	13
Total Graduate courses	14
Part-time blended delivery	19
Assessment of teaching and learning	20
Resources for the proposed program	20
The Faculty	20
Course production and delivery	24
Physical and Financial Resources	24
Quality and other indicators	25
Online Course Development	26
Administrative Structure.....	26
Projected intake and enrollments	27
Method used for brief preparation	27
APPENDIX.....	29
Appendix A: Working Group	29
Appendix B Faculty Members participating in the program	30
Appendix C Faculty CVs.....	30
Appendix D Library Resources	30
TABLES	
Table 1: Core Faculty Member by Field and Expertise.....	22
Table 2: Anticipated Teaching Assignments for the Proposed Program.....	23
Table 3: Course Production, Development and Delivery Schedule.....	24
Table 4: Projected Intake and Enrolment.....	27
Table 5: Tentative Program Development and Approval Schedule.....	28

PROPOSAL BRIEF FOR A MASTERS OF SCIENCE IN HEALTH SCIENCE EDUCATION

INTRODUCTION

Within Ontario, and across Canada, there are no Master of Science in Health Science Education programs that focus specifically on graduate level education to improve knowledge and skills for health practitioners who teach in clinical health science fields. This master's program leads to the degree Master of Science in Health Sciences Education for health science clinical educators (physicians, nurses, occupational therapists, physiotherapists, midwives, physician assistants, etc.), and others who teach in health sciences education, research, and academic clinical care, and who lead in health care settings. The program builds on the internationally renowned signature pedagogies in health science education developed and pioneered at McMaster University's Faculty of Health Sciences, (Problem-Based Learning, Self-Directed Learning). The program offers two completion pathways: a course-based option or a thesis-based option. The course-based stream consists of six required courses (two quarter courses and four half courses) and one elective course plus a scholarly paper. The thesis option consists of four required courses (two quarter courses and three half courses) and a thesis. The program will be highly accessible through a blended delivery format of online and classroom formats. There will be one program intake per year of 20-25 (almost all anticipated to enroll as part-time students with 1-2/year anticipated to request the thesis option, either as part-time or full-time students), with courses offered every semester. The program will act as a strategy to enhance collaborative, patient-centred care by engaging learners in inter- and intra-professional practice; to shape the future of education in health science professional programs; and to foster health professions leadership and succession planning.

The Faculty of Health Sciences at McMaster has had enormous educational influence on health science education. The pioneering work conducted in Problem-Based Learning (PBL) in the Faculty of Health Sciences at McMaster is widely known. The PBL approach has had enormous influence in education at all levels. It has spread from its beginnings 40 years ago as a signature pedagogy in the Faculty of Health Sciences (FHS) at McMaster University (McMaster FHS) to influence curriculum design and teaching strategies world-wide. PBL has been adopted in over 120 universities for medical education and health sciences education (e.g. nursing, physiotherapy, pharmacology, etc), in other disciplines (e.g. architecture, engineering), and at all educational levels, primary, secondary and post-secondary

education. The PBL teaching and learning methodology that uses an inquiry approach focuses on student-driven small group learning to foster critical thinking, higher retention, and stronger cognitive competencies including coping with uncertainty and communication skills.

Learner demand and need for the program

Health science educators have had limited choices in their options of graduate programs that specialize in health science education. Over the past twenty years there has been growing interest by health science educators in graduate programs that pertain to clinical teaching and scholarship and prepare individuals for leadership roles in a faculty of health science academic environment, however, there have been few opportunities to pursue such studies in Canada. At McMaster, approximately 100 new faculty members per year as well as many established faculty members who have taught for a number of years, seek professional development as health science educators and have expressed a strong interest in a for-credit graduate program in clinical health science education. Clinical educators have had to rely on professional development workshops at McMaster to learn about education, enroll in generic higher education programs that were not specific to health science education or graduate programs in education that cater primarily to elementary and secondary teachers, or programs that were at a distance and located in other countries (e.g. University of Illinois at Chicago; University of Dundee, Scotland, Maastricht University, Netherlands, and the University of Bern, Switzerland).

The process of developing a proposal for a graduate program began with a needs assessment that included wide consultation within FHS, an internal and external environmental scan, extensive data gathering, including a literature review, key stakeholder interviews, and a faculty-wide survey. A core development group was formed that consulted with the broader academic community at McMaster University and similar health science master's programs offered worldwide (the University of Illinois at Chicago; Maastricht University in the Netherlands; University of Dundee in Scotland, and the University of Bern, Switzerland).

The results of an analysis of these programs reveal core courses in cognition and learning (educational psychology), curriculum design, assessment and evaluation, and educational research methods. Leadership is a core course or an optional track within most programs. International programs varied in their delivery mode. The University of Illinois-Chicago and the University of Dundee offer their programs

in dual modes, classroom or blended (classroom and online), whereas similar programs at Maastricht University and the University of Bern have one blended mode of delivery in which the core courses and a minimum number of others are classroom-based accompanied by online electives.

In order to extend consultation and engage potential participants in a discussion regarding the proposed master's program, a needs assessment survey of McMaster University Health Science faculty was developed and built on the priority areas identified in the environmental scan. Quantitative and qualitative data from our faculty survey in 2010 (N=287) underscore interest in the program, confirm reasons for interest in the degree, preference for course content, course delivery mode, comfort with various learning formats, and indicate that there are specific learning needs that are not being met. Respondents indicated they wanted a curriculum designed for health professionals, the context of which is grounded in the science of teaching and learning specific to current and future of health science education. That context includes the emerging field of Interprofessionalism in health science education; pedagogy, including knowledge of McMaster's FHS signature pedagogies and related cognitive and educational psychology as it pertains to health science education; learning environments (small group learning); curriculum design in health science education; assessment and evaluation in clinical health science education; research methods germane to health science education; educational leadership; and online learning. Respondents also indicated they want to enhance scholarship, engage in professional development, and prepare for advanced health science education. Respondents stressed they preferred a blended learning format consisting of online learning with face-to-face classroom intensives as the delivery format of choice. The greatest interest was for academic advancement through a dedicated, part-time graduate program.

The Association of Faculties of Medicine in Canada report, *The Future of Medical Education in Canada (FMEC) (2010)*, recommends that to improve collaborative, patient-centred care, the education of physicians should include the development of inter- and intra-professional teamwork competencies. It is anticipated that a number of the candidates in this master's program will be physician faculty. The FMEC report suggests that experience working in collaboration with other health care professionals be integrated across disciplines and throughout the spectrum of health education, from undergraduate to post-graduate education. This program responds to that recommendation by integrating interprofessionalism as a concept and context in all courses. Thus, the MSc Health Sciences Education program will be designed to meet the interprofessional needs of the vast variety of health professionals

that this master's is targeted for; physicians, nurses, occupational therapists, physiotherapists, midwives, physician assistants, pharmacists and others.

The FMEC report also recommends that based on rapid and evolving technological changes medical education programs should increase the use of technology. The MSc Health Science Education program responds to this recommendation through its extensive use of technologies for learning and communication in online courses e.g. Avenue to Learn (learning management system).

Brief listing of the Program

The MSc Health Science Education will be predominantly offered as a part-time, two-three year program offered to health educators who are currently employed in a clinical and/or academic teaching capacity in any health care sector in Canada or internationally. A small number of students are anticipated to prefer the thesis based option, which will be offered as both a full-time and part-time option. The program will be delivered through a blended learning format (online and classroom intensives) and offered as a course-based option or a thesis option. The course-based option will consist of three components in which students complete six required courses (two quarter courses and four half courses) and an elective, and a scholarly paper as an exit requirement. In the thesis option student will complete four required courses (two quarter courses and three half courses) and a thesis.

The program features will include blended delivery to serve health professionals living and working at a distance from McMaster University's Hamilton campus. Many of the students will be clinical practitioners, who also teach in McMaster's various health science education programs. They may reside outside Hamilton. The medical undergraduate and postgraduate programs now occur at the three main campuses: Hamilton, Kitchener/Waterloo and Niagara. The School of Nursing's programs, School of Rehabilitation Sciences programs and Midwifery programs are offered at multiple campuses. Other students interested in the program will be associated with other health science education programs in Ontario and across Canada.

Objectives of the program

The program is aligned with many of the priority objectives in McMaster's strategic plan as outlined in Refining Directions 2009, such as expanding inquiry and problem-based learning (PBL) approaches, supporting trans-disciplinary research and educational programs, increasing graduate enrolment to at least 20% of total student enrolment, developing new graduate programs, fostering the scholarship of teaching and learning, reinforcing the quality and status of teaching and learning, and expanding technology-rich opportunities that enable innovation.

The objectives of the program are to offer a graduate level (Master of Science) curriculum at McMaster University specifically designed for health science educators that:

1. Integrates graduate level training in interprofessionalism, leadership, and McMaster's Faculty of Health Science signature curriculum (e.g. PBL, concept based learning) in course content, learning strategies and activities. These themes will be written across the curriculum
2. Enables knowledge, academic skill and attitude building pertaining to health science education,
3. Enhances preparedness for advanced professional and inter-professional academic roles including leadership in health science education,
4. Is delivered in a format accessible to health professionals working in diverse settings,
5. Engages learners with interactive learning strategies in classroom and online learning,
6. Provides learners with more in-depth exposure to McMaster models of problem-centred learning in health sciences education,
7. Enables learners to utilize information technology for classroom and online learning, communication, and assessment,
8. Incorporates program learning outcomes that align with the Ontario Council of Academic Vice Presidents (OCAV) Graduate Degree Learning Expectations required for all graduate courses: depth and breadth of knowledge; research and scholarship; level of application of knowledge, professional capacity/autonomy; level of communication skills; and awareness and limits of knowledge.
9. Prepares students for further education, e.g. PhD, by providing a thesis-based option.

The MSc Health Science Education includes a number of objectives that align with the goals of McMaster University Faculty of Health Sciences and educational directions of McMaster University as articulated in Refining Directions II.

Program Learning Outcomes

Upon completion of the program students will be able to demonstrate the following learning outcomes:

1. Depth and breadth of knowledge and skills in a systematic understanding of knowledge and skills, and current problems in:
 - a. Pedagogy, curriculum designs and teaching strategy fundamentals in health science education.
 - b. The science of teaching and learning and its clinical application.
 - c. Assessment and evaluation in health science education.
 - d. Academic scholarship in health science education.
 - e. Educational research methods in health science education.
 - f. Educational leadership in health science education.
 - g. Application of information technologies to health sciences programs.
2. A conceptual understanding and methodological competence that demonstrates:
 - a. A working comprehension of how established techniques of research and inquiry are used to create and interpret knowledge in health science education,
 - b. Critical evaluation of research and scholarship in health science education,
 - c. Treatment of complex issues based on established principles and techniques,
 - d. A sustained argument applying the integration of science education concepts in a scholarly paper or thesis,
 - e. Presents originality in the application of knowledge and skills.
3. Level of application of knowledge – Applies knowledge and skills related to theoretical frameworks to area of practice and demonstrates competence in the research process by applying an existing body of knowledge in the critical analysis of a new question or specific problem or issue in a new setting through the presentation of scholarly work including thesis project work. For students who elect the thesis stream, demonstrates competence in the research process by successful completion of thesis project work.
4. Professional capacity/autonomy
 - a. The qualities and transferable skills necessary for employment requiring the exercise of initiative and of personal responsibility and decision-making in complex situations.
 - b. Intellectual independence.
 - c. Ethical behaviour consistent with academic integrity and the use of appropriate guidelines and procedures for responsible conduct of research.

- d. The ability to appreciate the broader implications of applying knowledge to particular situations.
5. Level of communications skills – communication of ideas, issues and conclusions clearly.
6. Awareness of limits of knowledge – cognizant of the complexity of knowledge and of the potential contributions of other interpretations, methods, and disciplines.

It is also anticipated that graduates from the program will be able to:

- Contribute to the advancement of the critical analysis of health science education.
- Prepare for employment as educational leaders in health science faculties, diverse health care settings, within post-secondary education, and health care industry.

Program Requirements

The passing grade for courses will be B- consistent with other Master level courses offered by the School of Graduate Studies. Scholarly integrity will be expected of all students taking the program in keeping with policies of the McMaster School of Graduate Studies.

Each quarter course is worth 1.5 units, each half course is worth 3 units, and each full course is worth 6 units. The course-based option will consist of a total of four required half-courses ($4 \times 3 = 12$ units), two required quarter-courses ($2 \times 1.5 = 3$ units), one half course elective ($1 \times 3 = 3$ units), and one full course (scholarly paper = 6 units) for a total of 24 units. The thesis option will consist of three of the program's core half courses ($3 \times 3 = 9$ units), two required quarter-courses ($2 \times 1.5 = 3$ units), and a thesis, two full courses (12 units), for a total of 24 units. There are a total of 6 courses (18 units), one elective (3 units), and a full course scholarly paper (6 units) in the course-based option. In the thesis option the thesis is worth 9 units. The proposed required courses and program components for the course-based option and the thesis option are listed as follows:

Course-based Option

- Health Science Education I: Fundamentals of health science education
- Health Science Education II: Scholarly works
- Cognition and curriculum design in health science education
- Assessment and evaluation in health science education
- Educational research methods in health science education
- Health Science Educational leadership
- Elective in Online Learning in Health Science Education or another graduate course
- Scholarly paper
- 24 units

Thesis Option

- Health Science Education I: Fundamentals of health science education
- Health Science Education II: Scholarly works
- Three of:
 - Cognition and curriculum design in health science education
 - Assessment and evaluation in health science education
 - Educational research methods in health science education
 - Health Science Educational leadership
- Thesis
- 24 units

Program Nomenclature

The program is named a Master of Science in Health Science Education, as typically degree programs coming out of the Faculty of Health Science are Master of Science programs. The science of teaching and learning in the health science education context permeates all courses in the program.

Admission Requirements

The admission requirements for the program are appropriate for the learning outcomes. Candidates for admission to this health science education program will have an honours-equivalent, four-year bachelor's degree in a health science or related health professional degree (e.g. Bachelor of Health Sciences from the Nursing, Physician Assistant or Midwifery Programs), an MD, or a Master of Science in Physiotherapy or Occupational Therapy, etc. or others with special permission and health care qualifications. They will be individuals that are interested in augmenting their existing knowledge and skills through a program of study that facilitates exploration and analysis of the full range of health science education as well as provides the necessary historical, theoretical and critical armature. To be considered for admission to the MSc Health Science Education program, an applicant must have:

- A four-year undergraduate degree with at least a B+ from an accredited university (equivalent to a McMaster 8.5 GPA out of 120 in the final year in all courses in the [a health science related] discipline.
- Health professional training (as discussed above).
- An official transcript of academic work completed to date at all post-secondary institutions attended, sent directly from the issuing institution(s). If the final degree does not show that a completed degree has been conferred, an official copy of the diploma is also required.
- Two confidential letters of recommendation from instructors most familiar with the applicant's academic work, sent directly from the instructors.
- Teaching experience in a health-related discipline. Applicants without teaching experience will be considered for special permission pending space availability.
- A personal Curriculum Vitae (resume).
- A written personal statement of Intent that explains why the applicant is seeking graduate education in this program. (500-800 words) with an:
 - Explanation of what is desired from this degree.
 - Explanation of their area of interest in scholarly work.
- If English is not the applicant's native tongue, an official copy of the applicant's TOEFL Test of English as a Foreign Language score or other evidence of competency in English must be submitted. A minimum TOEFL (iBT) score of 92(550 on the paper – base TOEFL or 237 on the computer-based test) is required.
- A maximum of 25 students will be admitted each year.
- A maximum of two to three thesis students will be admitted each year.
- Full time thesis students will be accepted dependent upon arranging appropriate funding, such as may be obtained from working as a research assistant (RA) with a research unit, working as a teaching assistant in the program, or obtaining external scholarships.

Structure

The program's structure is designed to meet the specified learning outcomes and degree level expectations. Participants in the program will be full-time working professionals who require flexible learning. Part-time, blended and online learning formats allow physicians, nurses, occupational

therapists, physiotherapists and other health practitioners to attend virtual online classes throughout the fall and winter semesters and face-to-face classroom sessions in an intensive format during the summer semester. The program length (two-three years) ensures that the program requirements can be reasonably completed within a five-year time period.

By offering a course-based option and a thesis option we anticipate that the program will be attractive to a range of students, including those that wish to focus on conducting research in health science education. We expect that the majority of the students will enrol in the course-based stream and that some students (1-2 per year) will enrol in the thesis stream. The thesis stream will appeal to individuals who may wish to pursue a PhD, such as nurse educators wishing to teach at the university level or clinical investigator trainees who wish to have health science education as the focus of their research career. At the same time it is expected that graduation from the course-based option with an A standing and evidence of research capabilities (experiences) that are equivalent to the research competencies demonstrated by a master's thesis will satisfy entry requirements for PhD programs that accept non-thesis master's degree prepared applicants.

The Health Science Education I and Health Science Education II courses are held on campus during the summer semesters. Health Science Education I is offered at the beginning of the program and Health Science Education II is offered the following summer. These two courses fulfill a residency requirement. The remainder of the required courses are held online. Learners enroll in the foundation course, Health Science Education I, first, after which they take the remaining required (core) courses in the order they chose pending availability. In the first year of delivery only one core course will be offered each semester. In following years, one or more core courses will be offered each semester. Learners in the course-based stream take the elective course last after completing required courses. This scholarly work will reflect the student's area of interest, such as curriculum design, program evaluation, or assessment test construction. The work will be completed in the format of a paper suitable for publication. Students in the thesis option can opt to do the program full-time should they wish to pursue their thesis project while taking courses.

Health Science Education II will be held in the summer semester for students who have completed at least two courses. This course offers students an opportunity to interact with their peers and faculty face-to-face and to present scholarly works in progress.

Program Content and Curriculum Design

Unlike Master in Education programs currently offered in Ontario and across Canada, McMaster University's program will focus specifically on health science education. Conventional Master in Education programs are general by necessity, and do not offer focused study on learning in clinical contexts. The Faculty of Health Sciences at McMaster University has exceptional strength in faculty specializing in interprofessional clinical health science program curriculum design, development, educational research methods, and online learning applied to health science education. McMaster FHS is well positioned to offer students an in-depth and extensive examination of health science education. The Faculty of Health Sciences at McMaster is an interprofessional faculty both organizationally and in terms of educational curriculum design and delivery. Faculty members work across the various schools and programs to incorporate interprofessional perspectives, curricula, planning, and directly participate in shared decision making across the full range of academic and clinical roles in health science professions.

Given the changing face and complexity of the health science education environment, it is necessary that health science educators supplement their theoretical and historical education practices. The curriculum addresses the current state of health science education through content and context. The program achieves the objectives and outcomes through a course of study encompassing the many domains of knowledge, skills and attitudes in which health care educators and leaders must be conversant.

The unique design of the program embeds four key features desired by health educators throughout all courses that act as overarching tenets: ***interprofessionalism; educational leadership; health science education signature pedagogies (e.g. Problem Based Learning); and mixed and flexible delivery format.*** To ensure authentic interprofessional education (IPE), the courses in the program will be grounded in the interactive engagement of students from different health science professions in team-based learning groups, which embody the principles and practices for integrating interprofessional education. The IPE components of this master's degree will be both implicit and explicit. The implicit culture of the program is interprofessional, including a diverse interprofessional faculty, interprofessional culture and interprofessional cohort of students learning with, from and about each

others' programs, roles and disciplines. The explicit component will consist of specific IPE content, teaching methods, activities, and learning opportunities in and across all courses.

The program is set within a rich health science education environment with experts in health science education. This environment provides the ideal learning context for health science education.

McMaster University faculty includes internationally recognized leaders in health science education (most notably in PBL). The large number of health professional training programs offered at McMaster provides an unusually full and versatile environment in which to practice health science education. This includes specialized educational support resources, centres and programs, such as the Educational Program in Anatomy, The Centre for Simulation-Based learning, and the Program for Educational Research and Development. Clinical health science education occurs on the wards and clinics in the hospitals in Hamilton including Hamilton Health Sciences Corporation and St. Joseph's Healthcare and in a large number of affiliated community hospitals and health care agencies.

The instructional design of the courses will reflect a constructivist approach to teaching and learning, which is germane to discovery learning, PBL, and other progressive teaching and learning strategies utilized in health science education. Learners will experience learning approaches consisting of small group learning led by an instructor (tutor) who facilitates discovery learning, case/situation analysis, problem-solving from multiple perspectives, and self-directed learning, to name a few. Learning strategies and activities within courses will provide learners with opportunities for experimentation, interprofessionalism and leadership and the application of theoretical constructs to their educational practice. Courses will be subdivided into modules or units. The courses will enable high intellectual quality learning of health science education concepts, processes and attitudes suitable for learners who wish to go on to PhD studies. Learners will work with experienced clinical and academic teachers/tutors to explore a range of approaches and concepts that have proven successful in health science education.

Total Graduate courses

Health Science Education I

This fundamentals course provides students with an overview of the program and courses where the over-arching goals, learning outcomes, instructional methods, resources, assessment methods, and faculty of the program are introduced. The Interprofessional culture, structure and content will be

introduced and examined. Key concepts, such as clinical reasoning, problem-solving, assessment principles, and leadership as they pertain to core courses will be introduced. Students reflect upon their goals and learning outcomes for the program, experience small group work, such as PBL tutorials in a face-to-face setting in preparation for online learning groups, and explore library resources and online learning tools such as (Avenue to Learn) and video conferencing. This is a face-to-face course offered in an intensive summer schedule.

Health Science Education II

This course provides students with an opportunity to engage in intellectual dialogue, with an interprofessional group of fellow students about their scholarly work in progress, present works-in-progress and provide feedback. This course serves a purpose similar to a symposium held part way through a graduate program, e.g. Global Health (FHS McMaster), Health Professions Education (University of Illinois, Chicago). Students also participate in presentations on the process of writing and preparing a manuscript submission to a health professions journal. This is a face-to-face course offered in an intensive summer schedule.

Cognition and Curriculum in Health Science Education

In this course students will explore the science of memory, thinking, learning and its application to teaching and curriculum design in health science education programs ranging from historical foundations to current practice. Students will relate and apply epistemologies and theoretical frameworks from cognitive and educational psychology, teaching strategies and methods, such as PBL, concept-based learning, simulation-based learning, etc. to their teaching practice area. IPE content and culture is woven throughout. This course is offered online and facilitated by an interprofessional team.

Assessment and Evaluation in Health Science Education

In this course students explore theories and concepts underlying assessment, assessment strategies, and evaluation planning for health science education at the course and program level. Assessment topics include theory of measurement, reliability, validity, and generalizability theory and its application to assessment and evaluation instruments appropriate for health science academic and clinical settings, characteristics of high fidelity and low fidelity simulations for clinical performance assessment, written examination formats, such as multiple choice and performance measures, including the Objective Structured Clinical Exams (OSCE). Students will develop a basic knowledge of program evaluation

including conceptual frameworks for program evaluation, instrumentation, data collection and data sources, and reporting results. This course is facilitated online by an interprofessional faculty team, with emphasis on commonalities and differences of assessment and evaluation across and within programs. Interprofessional assessment will be part of the content, including both formative and summative IPE assessment.

Educational Research Methods in Health Science Education

In this course students are introduced to a range of research methods used to assess learning in health science programs. Major topics include psychometrics, epidemiology, experiments, quantitative, and qualitative methods. This course is offered online and facilitated by an Interprofessional team.

Educational Leadership in Health Science Education

In this course students relate the theoretical and conceptual fundamentals of educational administration in academic health sciences and community health care contexts, such as organizational behavior theory, leadership, mentorship, and the change process to their own practice. This course is offered online and facilitated by an Interprofessional team.

Elective

The elective course enables students to explore in greater depth an area of interest or a topic related to health science education that will meet their personal learning needs. Students may take either an online or onsite course.

Elective: Online Learning in Health Science Education

In this course students explore the theory and application of the pedagogies, knowledge and teaching skills relevant to current and emerging learning technologies. Topics include the benefits and challenges of online learning, managing faculty and student transformation from classroom to online teaching and learning, facilitation of online discussions, and the design of learning activities and selection of technological resources for online learning (e.g. PBL online). This course is offered online and facilitated by an interprofessional team.

Elective: Other programs

Other courses may be taken as electives but must be approved in advance by the program. These courses include other McMaster graduate courses, courses from other universities, and Independent Study. McMaster University offers numerous graduate courses that may be of interest to students in the MSc Health Science Education program as electives. Some of the more likely courses will be housed in programs, such as Nursing, Health Research Methodology (HRM) and Rehabilitation Science. Student eligibility to take graduate courses from other programs as an elective will vary from graduate program to program. Some courses in these programs may require prerequisites. McMaster policy indicates that all graduate courses are open to suitably prepared students. The following courses have been pre-approved as electives for the Health Science Education program.

EDUC 750	Principles and Practices of University Teaching
HRM 702	Introduction to Biostatistics (Online)
HRM 751	Observational and Analytic Research Methods (pre-requisite HRM 721)
HRM 762	Program Evaluation (pre-requisite HRM 721 and HRM 730 or HRM 751)
HRM 727	Theory and Practice of Measurement (pre-requisite HRM 702 or equivalent statistics course)
NURS 745	Introduction to Qualitative Research
NURS 770	Mixed Methods Research Designs for Health Services and Policy Research

Scholarly Paper

The scholarly paper (equivalent to a full course) is an opportunity for MSc HS Education students to demonstrate, in writing, their ability to integrate ideas that reflect their analysis and use of knowledge in areas of health science teaching and learning, research and leadership. The scholarly paper will demonstrate integrative thinking and focus on a topic selected by the student in consultation with their Scholarly Paper Supervisor. Students will develop a proposal individualized to the student’s area of interest that addresses the MSc Health Science Education’s Guidelines for Scholarly Papers. The scholarly paper is distinctive from a thesis as it does not require the collection or analysis of primary data or the conduct of research with subjects, although this may be an option in some circumstances. The scholarly paper will be graded by the scholarly paper Supervisor and a Second Reader.

Some components of the paper will be started in a preliminary form by the student during their program. Students will be encouraged to present part of their paper (e.g. literature review) during the Health Science Education II Scholarly paper presentations course. Depending on the specific project topic, some students may need to conduct fieldwork to collect necessary data and in such cases appropriate ethics approval may be required. Supervisory feedback will be provided on an on-going basis online, by telephone videoconference, or in person should a face-to-face meeting at McMaster University be required.

Thesis

For the thesis option, students will complete a formal written research proposal that outlines their project plan and submit it for approval to their Supervisory Committee within six months of entry into the program for full time students and within one year of entry for part-time students. The thesis will demonstrate integrative thinking, understanding and reviewing the relevant literature and involve conducting original research, and will focus on a health science education topic that is selected by the student in consultation with their thesis Supervisor. The proposal will be individualized to the student's area of interest that addresses the Thesis Guidelines established for the MSc Health Science Education. Some components of the paper may be started in a preliminary form by the student during their program. Students will be encouraged to present part of their thesis research (e.g. literature review) during the Health Science Education II Scholarly paper presentations course. Students who plan to conduct fieldwork to collect necessary data will seek appropriate ethics approval. Supervision feedback will be provided on an on-going basis by email online, telephone, videoconference, or in person should a face-to-face meeting at McMaster University be required. Students who are enrolled in a residency program and are pursuing the thesis option of the MSc Health Science Education program, in conjunction with their training, such as McMaster's Clinical Clinician Investigator Program (CIP), may wish to alter between full time and part time enrollment.

Thesis students must submit a written thesis and oral defense (in person) before a committee comprising the Graduate Program Director, the student's Supervisory Committee and an external examiner.

Part-time blended delivery

The program is primarily designed for part-time student enrollment and to meet the learning needs of diverse clinical health science professionals. While students may also choose their elective course from other programs in classroom or online mode courses, it is anticipated most will opt for the online course elective offered by the program.

The program will be delivered in a blended delivery mode (a combination of face-to-face sessions and online sessions). This mode is appropriate to meet the intended learning outcomes including the Degree Level Expectations and the access to learning needs of the working health care professional. Daytime course offerings and campus-located courses are inaccessible to the majority of the intended learners in the program. As practicing health professionals, physicians, nurses, physiotherapists, administrators, etc. often work rotating shifts leaving little time for structured daytime course schedules. In addition, some of the learners live and work at a distance from the McMaster Hamilton campus (main campus), or work at another McMaster FHS campus, teaching location or clinical settings; or at another university within Ontario or across Canada.

The program begins with a face-to-face intensive fundamentals course that will include an orientation and overview of the program. The remaining courses will be held online with the exception of the Scholarly Work presentations course (Health Science Education II). Online sessions will be delivered by Avenue to Learn, the learning management system (LMS), currently in use by McMaster.. Both synchronous and asynchronous discussion will be held in each course. Synchronous online communication will utilize web conferencing programs, such as Elluminate, which has been used successfully in FHS programs at McMaster University for several years.

In the courses delivered online student/faculty contact will take place regularly through synchronous and asynchronous discussions and videoconferences. The scholarly paper will be submitted in print form. However, it is anticipated that student/supervisor meetings and evaluation of the scholarly paper will be conducted via telephone or web conferencing to ensure direct (live) evaluation of the student's knowledge.

Assessment of teaching and learning

Course level learning outcomes align with program level learning outcomes to ensure that as students master course level learning outcomes, program level outcomes are in turn completed. A range of assessment strategies will be employed that allow students to demonstrate competency of course learning outcomes. The completion of a scholarly paper or thesis will allow students to demonstrate competency of program learning outcomes.

The tracking of student success in achieving course level learning outcomes is monitored as is customary by faculty on a course-by-course basis. The MSc Health Education Administration and Evaluation Committee will monitor student achievement across courses.

Resources for the proposed program

The Faculty

The faculty of FHS possesses exceptional depth of experience in health science education. Faculty members who will teach in the program have expertise in health science education, assessment and evaluation in health science clinical education, and in PBL. The development of a critical analysis of education research in health care settings will be met by building on the many years of FHS research expertise in health science education research.

Faculty for core courses will be drawn from the FHS schools (medicine, nursing, rehabilitation science) and programs (midwifery, physician assistant, etc) that offer advanced health sciences professional education and PERD. Faculty for electives courses from other programs will be affiliated with FHS graduate health science programs and other departments, many of which offer interdisciplinary programs. Health Sciences affiliated graduate programs include research oriented graduate programs, such as medical sciences, health research methodology, nursing and rehabilitation science and interdisciplinary programs such as Masters of Global Health, eHealth, Health and Aging, and Health Policy. The program offers one elective course, which is expected to be of interest to the majority of the

students. It is anticipated that some students (two to three) may take an elective from one of these other programs and that few students will take the same elective.

The demands of teaching in the MSc Health Science Education program are not expected to substantially impact the demands on core faculty who also teach in existing programs. Teaching and facilitating within each course is team based, which distributes the teaching amongst a group of faculty. There has been widespread interest by other FHS faculty in participating in the program in partial ways, such as guest lectures, second readers, etc. Over eighty faculty members constitute the Supplementary Faculty List (see Appendix B). The workload of the faculty members in the program will be manageable.

Students will require faculty supervision for their scholarly paper projects, which will be graded by the faculty member and a second reader. Many of the core program faculty include individuals who are experienced supervising graduate students (course-based and thesis based) in addition to teaching graduate courses, serving as committee members, and as external examiners for theses and evaluations at McMaster and other institutions. Table 2 lists core faculty, who will teach in the program and serve as supervisors for scholarly papers and thesis projects. The chart identifies faculty by their home unit affiliation, area of expertise, and gender. Appendix B lists additional faculty who will be involved in the program as second readers for scholarly papers and periodic teaching. It should be noted that numerous health science faculty will have only intermittent participation in the program, such as serving as a second reader for a scholarly paper.

Table 1- Core Faculty Member by field and expertise

Faculty Name & Rank	M/F	Home Unit	Degree & University	Area or Expertise
Baptiste, S.	F	Rehabilitation Science	MHSc, McMaster	Leadership
Bayer, I.	F	Pathology	PhD, Toronto	Learning technologies
Cairney, J.	M	Family Medicine	PhD, Western	Epidemiology
Carusone, S.	F.	CE & B	PhD, McMaster	Online Learning
Chen, R.	F	Nursing	M.Sc., N. Yale	Research methods
Dore, K.	F	CE & B	PhD, McMaster	Research methods
Dolovich, L	F	Family Medicine	PharmD, Toronto	Assessment
Grierson, L.	M	Family Medicine	PhD, McMaster	Research methods
Jung, B.	F	Rehabilitation Science	PhD, Western	Interprofessionalism
Malott, A.	F	Midwifery		
Marshall, D.	F	Family Medicine	MD, McMaster	Leadership
Martin, L.	F	Nursing	PhD, Toronto	Teaching methods Evaluation
McCaughan, K.	F	Program for Faculty Development PAEP	PhD, Simon Fraser	Educational Psychology Online Learning Curriculum
McKey, C.	F	Nursing	PhD, Capella	Leadership
Musson, D.	M	Anesthesia	MD, PhD	Simulation-based learning
Neville, A.	M	Oncology	MD, Aberdeen M.Ed. OISE	Leadership
Norman, G.	M	CE&B	PhD, McMaster	Research methods Educational psychology
Rieter, H.	M	Oncology	MD, Toronto M.Ed., OISE	Evaluation
Risdon, C.	F	Family Medicine	MD, McMaster PhD, Hertfordshire	Leadership
Salfi, J.	F	Nursing	PhD, McMaster	Interprofessionalism
Sherbino, J.	M	Medicine	MD, Ottawa M.Ed., OISE	Medical education
Solomon, P.	F	Rehabilitation Science	PhD, Waterloo	Leadership
Stratford, P.	M.	Rehabilitation Science	MSc., McMaster	Quantitative methods
Tryssenaar, J.	F.	Rehabilitation Science	PhD, Western	Learning technologies
Wainman, B.	M	Midwifery	MD	Learning technologies
Walsh, A.	F	Family Medicine	MD, Western	Leadership
Whyte, R.	M	Anesthesia	MD	Research Methods

CE&B – Clinical Epidemiology and Biostatistics

PAEP – Physician Assistant Education Program

Teaching Assignments

Each course will be co-developed by an interdisciplinary team of faculty who are content experts in various areas of course content. Each content expert will be responsible for the development of a section of the course in his or her area of content expertise. Several members of the development team will also teach/facilitate sections of the course.

Table 2 - Anticipated teaching assignments for the proposed program

Course	Faculty	
Health Science Education I	Jung, B. Marshall, D. McCaughan, K. Neville, A.	
Health Science Education II	Jung, B. Marshall, D. McCaughan, K.	Norman, G
Cognition and Curriculum Design in Health Science Education	Baptiste, S. Martin, L. McCaughan, K. Musson, D.	Norman, G. Neville, A. Whyte, R.
Assessment and Evaluation in Health Science Education	Dore, K. Dolovich, L. Grierson, L. Martin, L.	Reiter, H. Salfi, J. Stratford, P. Sherbino, J.
Research Methods in Health Science Education	Chen, R. Dore, K. Grierson, L. Norman, G.	Whyte, R
Leadership in Health Science Education	Baptiste, S. Marshall, D. Walsh, A. McKey, C.	Risdon, C. Solomon, P
Online learning in Health Science Education	Bayer, I. Carusone, S.C. Malott, A. McCaughan, K.	Tryssenaar, J. Wainman, B.

Course production and delivery

Course production will occur over a two-year period with three courses developed the first year and four courses the second year. Table 3 displays the step-wise production and delivery schedule.

Table 3 Course production development and delivery schedule

Course	2011/12			2012/13			2013/14			2014/15		
	Fall	Winter	Summer	Fall	Winter	Summer	Fall	Winter	Summer	Fall	Winter	Summer
Health Science	Develop (N)		Deliver			Deliver			Deliver			Deliver
Cognition & Curriculum	Develop (N)			Deliver			Deliver			Deliver		
Assessment & Evaluation		Develop (N)			Deliver			Deliver			Deliver	
Health Science				Develop (N)		Deliver			Deliver			Deliver
Research Methods				Develop (A)			Deliver			Deliver		
Leadership					Develop (A)			Deliver			Deliver	
Online Learning				Develop (N)			Deliver			Deliver		
Develop Total	3			4			0			0		
New (N)	3			2								
Adapt (A)	0			2								
Deliver	1			4			7			7		

Physical and Financial Resources

The program has the support of department chairs for faculty participation. Funding for the administration of the program will be provided by the FHS. Remuneration for faculty to develop and deliver the courses and for scholarly paper or thesis supervisors has been built into the budget.

As this is a part-time program, financial assistance for students through internal scholarships is not provided. However, students may apply for external scholarships or other funding.

Most classroom space for FHS programs is currently in the Michael DeGroote Centre for Learning and Discovery (MDCL) or nearby campus buildings (e.g. Health Sciences Center, Life Sciences). All core and

internal adjunct faculty in this proposal currently have access to private or semi-private offices with telephone and high-speed data lines. Office/carrel space is not normally provided to graduate students pursuing a course-project program. The program will require ready access to seminar rooms and program administrative office space. The students pursuing the thesis option will have study space in the FHS graduate study rooms located on the 3rd and 4th floors of the Health Sciences building. Since most students are part-time and most courses are online there is no need for graduate study rooms for the majority of the students. The on-site sessions will be held in the summer or on weekends when there are less demands on classroom space.

All faculty and graduate students are provided with an account on the university mainframe computer. This account gives them access to electronic mail facilities, Internet, learning management systems, and the library catalogue. In addition, students in the MSc Health Science Education will have access to an online portal where program specific information and resources will be available along with access to online video conferencing software, such as Elluminate. Once students register for an online course they gain access to the course's virtual classroom website in the learning management system (Avenue to Learn).

Quality and other indicators

Intellectual development of the student

The Faculty of Health Sciences at McMaster University is uniquely positioned to promote the intellectual development of students in this program due to the clinical and academic culture that the pioneers of McMaster FHS created and subsequent faculty have sustained by fostering excellence in interprofessionalism, leadership, and innovative teaching and learning strategies in health science education. This culture of modeling and enabling intellectual excellence, creativity, and integration is pervasive. FHS faculty members not only emulate these characteristics in their practice as clinicians but carry them forward into their academic roles. This results in collaborative teamwork mirrored in inclusive health science educational practice. Core faculty are well qualified to teach in this program as illustrated in their C.V.s (see Appendix C).

Online Course Development

Online courses are co-developed by interprofessional and multidisciplinary teams that consist of faculty from across FHS professional programs who are content experts, a multimedia developer, information technology staff and the MSc Health Science Education program director as project manager. As courses will be interactive, electronic learning resources will be developed that actively engage learners. Staff from Research, Instruction and Innovation in Educational Technologies (RIVET), a division of the Program for Faculty Development in FHS will provide technical advice, assistance, and technical resources to enable online course development. Additional online learning resources, such as video clips, will be developed with funds budgeted for multimedia audio/video production and editing services provided by the Centre for Leadership in Learning (CLL).

Administrative Structure

Program Administration

The administrative structure of the program will be highly consultative in order to respond to the interdisciplinary goals of the program. The MSc Health Science Education program director will work in conjunction with the executive, advisory, curriculum, admissions, evaluation, and student affairs committees. MSc Health Science Education committees will be developed as permanent committees, designed to deal with specific issues of the program. Each committee will have a clearly defined Terms of Reference, including role and composition. Committee membership will have representation from the Faculty of Health Science academic units (professional schools and programs: medical education, nursing, rehabilitation science, midwifery, and physician assistant).

The program will establish a governance document that will define the mission of the program. Any curriculum changes will be approved through the MSc Health Sciences Education Curriculum Committee, the FHS Graduate Curriculum Committees, the McMaster Graduate Council, McMaster University Senate, and the Quality Council.

Projected intake and enrollments

Table 4 illustrates the projected intake and Enrolments. In this initial year of program start up 15 students will be admitted. Each subsequent year 25 students will be admitted. Within seven years of program start up it is expected that 90 students will have graduated from the program.

Table 4: Projected intake and Enrolments

	Intake	Graduation	Enrollments
2012	15	0	15
2013	25	0	40
2014	25	0	65
2015	25	15	75
2016	25	25	75
2017	25	25	75
2018	25	25	75
Total	165	90	

Method used for brief preparation

This proposal brief was prepared by the Master of Science Health Science Education Program Committee, comprised of multidisciplinary representation of Faculty of Health Science faculty members who will administer and contribute to teaching in the program. In addition to the Committee, potential faculty members from the McMaster Undergraduate Medical Education Program, the Program for Educational Research and Development (PERD), the Centre for Simulation-Based Learning, the McMaster School of Nursing, Rehabilitation Science Program, the Physician Assistant Education Program and others have been consulted for program suggestions and concur with the Committee. The following is a summary schedule for development and implementation of the program developed in accordance with McMaster University's Institutional Quality Assurance Process (ICAP).

Table 5: Tentative Program Development and Approval Schedule

December 2010	FHS Graduate Program Committee discussion and approval
January – February 2011	Preparation of Proposal Brief
March	Dean’s Meeting
April- May	1. Program review/approval by FHS graduate studies curriculum and policy committee (GPCC) 2. FHS Faculty Executive
June	Grad Council
July-August	External Review (per new ICAP)
September	University Planning Committee
October	Senate Approval
October/November	External Review (per old OCGS schedule)
December	Internal Response to Reviewers’ Reports and revisions if required
September	Institutional Approval (second time if required)
January 2012	Approval by Senate (second time if required)
January 2012	Quality Council review
January – September 2012	Development, marketing, and admissions process
August/September 2012	First entering class
Spring 2015	First graduating class

APPENDIX

Appendix A: Working Group

- Dr. Denise Marshall, MD, Assistant Dean, Program for Faculty Development
- Dr. Colleen McKey, PhD, Assistant Professor, Nursing
- Dr. Kareen McCaughan, PhD, Assistant Professor, Curriculum Director, Program for Faculty Development and Physician Assistant Education Program
- Dr. Mary Law, PhD, Professor, Rehabilitation Science
- Dr. Dave Musson, MD, PhD, Assistant Professor, Anesthesia

Appendix B Faculty Members participating in the program

Appendix C Faculty CVs

Appendix D Library Resources

1.2.1 The School of Graduate Studies

The name "School of Graduate Studies" refers to the Associate Vice-President & Dean and Associate Deans of Graduate Studies, the Graduate Council, and the registrarial duties associated with graduate administration.

The Associate Vice-President & Dean of Graduate Studies provides leadership in maintaining and improving the standards of graduate scholarship in the University. The responsibilities include: being the School's voice in graduate matters concerning research and its funding, scholarships and assistantships, the development of graduate programs and policy statements affecting graduate work; being the designated chair of Ph.D. dissertation oral examinations; approving the nomination of external examiners for Ph.D. theses and receiving the examiners' reports. The Associate Deans of Graduate Studies routinely act as the Dean's delegates. They recommend revision or development of regulations or policies affecting graduate work, refer matters of policy and curriculum to the Graduate Curriculum and Policy Committees, and deal with student appeals. In addition to acting on behalf of the Graduate Admissions and Study Committees as described below, the responsibilities of the Associate Deans include the awarding of McMaster Graduate Scholarships by acting on recommendations received from departments offering graduate work.

The Associate Graduate Registrar and Secretary of the School administers the academic affairs of students enrolled in the School of Graduate Studies. This responsibility includes: registering graduate students; assessing tuition fees; maintaining records and files for applicants and new or in-course students; arranging Ph.D. oral examinations; ~~paying scholarship and research funds and teaching assistantships.~~ ranking candidates for competitive scholarships, and allocating scholarship funds for graduate programs.

1.3 RESPONSIBILITIES OF GRADUATE STUDENTS TO THE UNIVERSITY

Just as the University has responsibilities to graduate students, they have responsibilities to the University.

The student's responsibilities include, but are not limited to:

- registering annually until graduation, withdrawal, or withdrawal in good standing due to time limit;
- paying fees as required;
- complying with the regulations of the School of Graduate Studies as set out in this Calendar.

Where applicable, students are responsible for complying with such conditions as may be laid out in an accepted letter of offer. Students are also responsible for complying with the regulations governing graduate students at McMaster University with respect to full- and part-time status (see sections 2.4.2 and 2.4.3) and, in particular, for informing the School of Graduate Studies of any change in employment status. Students are further responsible for informing the School of Graduate Studies within two weeks, which acts as the official keeper of student records, of any change in personal information such as address, name, telephone number, etc. Students are also responsible for reporting through the department any change in student status, course registration, or withdrawal.

With regard to research and study, students are responsible for maintaining contact and meeting regularly with the faculty advisor, thesis/project supervisor or supervisory committee, for observing departmental guidelines, and for meeting the deadlines of the department and the School of Graduate Studies. If there is a problem with supervision, it is the student's responsibility to contact the Department Chair or Graduate Advisor. The provisions for changing a supervisor are outlined in Section 2.6.

Students who undertake to write master's or doctoral theses assume responsibility both for creating drafts of the thesis and for responding to direction from the Supervisory Committee. The student shall have the responsibility to write and ultimately to defend the thesis, and the Supervisory Committee has the responsibility to offer guidance in the course of the endeavour, and to recommend or not recommend the completed thesis for defence.

In order to receive a degree, the student must fulfill all departmental or program requirements and all University regulations, including those of the School of Graduate Studies. Students who have outstanding financial accounts at the end of the academic year will not receive their academic results, diplomas, or transcripts.

Since registration permits access to libraries and certain other academic facilities (including off-campus facilities), it also implies a commitment on the part of each graduate student to use such facilities in accordance with applicable rules, including all safety practices, guidelines and policies. Inappropriate behaviour that is deemed to be in violation of such practices and/or policies may lead to denial of access to the facility. If such a denial of access to facilities means that a student can no longer fulfill his/her academic obligations, the student will be required to withdraw involuntarily from his/her academic program. (see also Sections 6.2 and 7.3.5)

Full-time students are obliged to be on campus, except for vacation periods or authorized off-campus status, for all three terms of the university year. Vacation entitlement is discussed in Section 2.4.6. ~~Students always require their supervisor's approval to be absent from campus for a week or more. Any absence of one week or longer from campus which is not part of the student's vacation entitlement requires the supervisor's approval.~~ If the absence exceeds two weeks, the approval of the department chair is also required. In accordance with government regulations (see Section 2.4.2) students who will be absent from campus for more than four weeks in any one term require not only permission from the Department but also that of the appropriate Associate Dean of Graduate Studies. Note that this permission is needed even for field work or study elsewhere in the world, in order to allow the University to comply with the regulation requiring that a written explanation for such absences be lodged in the Graduate School office. Students may arrange, through the Department and the Associate Dean of Graduate Studies, to be "full-time off-campus" for periods of up to a year. In cases of unauthorized absence the student will be deemed to have withdrawn voluntarily from graduate study and will have to petition for readmission. No guarantee of readmission or of renewal of financial arrangements can be made.

2.1 ADMISSION REQUIREMENTS

McMaster University seeks candidates for graduate study who show high scholarly promise. Admission to a graduate program is based on a judgement by the University that the applicant can successfully complete the graduate degree program. The University's minimum requirements are identified in this section. Departments or programs may establish additional requirements, such as scores on the Graduate Record Examination (GRE). Applicants should read the admission statement for the program or department, as well as the section here. Admission is competitive: meeting the minimum requirements does not guarantee admission. Final decisions on matters of admission rest with the Graduate Admissions and Studies Committee for each Faculty. The Admission decision is not ~~subject to appealable appeal~~.

2.1.2 Admission Requirements for Ph.D. Degree

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Applicants may be admitted to a regular Ph.D. program at one of three stages in their academic work. Often they will have completed a Master's program. In some cases, they will be admitted to Ph.D. studies from a Master's program at McMaster without completing the Master's degree. Students still enrolled in a Master's with thesis program beyond 22 months must complete the thesis. In exceptional cases they may be admitted directly from a bachelor's degree.

For applicants who hold a Master's degree, the primary requirements are distinction in their previous graduate work (equivalent to at least a McMaster B+), and strong letters of reference.

Students enrolled in a Master's program at this University may be transferred to the Ph.D. program prior to completion of the Master's degree. Not sooner than two terms after initial registration in the Master's program here, students may request to be reclassified as Ph.D. students. After proper review, the department will recommend one of the following:

- (a) admission to Ph.D. studies following completion of the requirements for the Master's degree;
- (b) admission to Ph.D. studies without completion of a Master's program;
- (c) admission to Ph.D. studies but with concurrent completion of all requirements for a Master's degree within two months from the date of reclassification;
- (d) refusal of admission to Ph.D. studies.

For students in (b), the recommendation for admission to Ph.D. must identify which if any courses taken as a Master's student can be credited toward the requirements for the Doctoral program.

A student in (b) may re-register as a candidate for the Master's degree, provided that work to date has met the standards for the Master's program.

Students in (c) 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.

In certain programs, applicants with a first degree only, may be admitted directly to Ph.D. studies. Such students must show sufficient promise, including at least an A average. Within one calendar year the progress of students admitted to Ph.D. studies directly from a Bachelor's degree will be reviewed by their supervisory committee and the program. The program then will recommend one of the following:

- (a) proceed with Ph.D. studies;
- (b) not proceed with Ph.D. studies but re-register as a Master's candidate;
- (c) withdraw from the University.

A student admitted to a Ph.D. program who re-registers as a candidate for a Master's degree must meet all of the requirements for the Master's degree in order for it to be awarded.

Admission to a part-time Ph.D. program is possible only for an individual holding a Master's degree whose circumstances preclude uninterrupted full-time doctoral studies. Because of the divergent

nature of academic disciplines, part-time doctoral work is not feasible in some areas. Accordingly, no Department or Program is obligated to offer part-time doctoral work. As part of their applications prospective part-time students are required to provide a plan of study, including a clear account of when and where the thesis research is to be conducted. If facilities at the place of employment are to be used for the research, the signed agreement of the employer, recognizing the conditions surrounding graduate work, is also required. In addition, departments may have other requirements for admission to a part-time doctoral program. A part-time doctoral student must be geographically available on a regular basis, and must be able to participate regularly in departmental seminars and colloquia.

New section:

2.1.8 Exchange Students

Exchange students are individuals who, much like visiting students, are registered in a graduate degree program in another university and are paying fees to that university. The difference between a visiting student and an exchange student is that the exchange student participates in a formal exchange program between McMaster University and their home institution. A complete list of exchange agreements that McMaster participate in can be found on the Office of International Students Affairs webpage (<http://oisa.mcmaster.ca>).

2.1.9 English Language Requirements

English is the language of instruction at McMaster, except in the M.A. program in French. Hence it is essential that all students (except in the French program) be able to communicate effectively in English.

Applicants whose native language is not English will be required to furnish evidence of their proficiency in the use of the English language. Such applicants are required to supply this evidence as part of their application.

The most common evidence is a score on the Test of English as a Foreign Language (TOEFL), administered by the Educational Testing Service (Princeton, N.J., USA).

- In Engineering, a TOEFL (iBT) score of 80 (550 on the paper-based TOEFL test or 213 on the computer-based TOEFL test) is necessary;
- in other Faculties a minimum of 92 (580 or 237) is required.

The Michigan English Language Assessment Battery (MELAB), conducted by the Testing and Certification Division of the English Language Institute, University of Michigan (Ann Arbor, Michigan 48109 USA), is, however, the preferred test.

- A score of 85 is considered acceptable in the Faculties of Science and Engineering;
- 90 in the other Faculties.

Students who have completed an Academic ESL program through Canadian academic institutions may petition to have this considered in lieu of TOEFL.

2.4.2 Provincial Definition of Full- and Part-time Status

Under the regulations of the Government of Ontario, A *full-time* graduate student must:

- (a) *be pursuing his or her studies as a full-time occupation;*
- (b) *identify himself or herself as a full-time graduate student;*
- (c) *be designated by the university as a full-time graduate student;*
- (d) *be geographically available and visit the campus regularly. Without forfeiting full-time status, a graduate student, while still under supervision, may be absent from the university (e.g. visiting libraries, doing field work, attending a graduate course at another institution, etc.) provided that, if any such period of absence exceeds four weeks in any one term, written evidence shall be available in the Graduate Studies Office to the effect that the absence has the approval of the Chairman (sic) of the Department and the Associate Vice-President & Dean of Graduate Studies;*
- (e) *be considered to be a full-time graduate student by his/her supervisor or equivalent (designated by the university).*

~~In addition to these government regulations, it is the position of the Ontario Council on Graduate Studies, which appraises all of our graduate programs, that it supports “a ten-hour limit on university related employment and encourage[s] full-time students to limit time spent on employment inside or outside the university.”~~

2.4.3 McMaster University's Regulations for Full- and Part-time Status

In accordance with the above provincial regulations, McMaster requires students to register annually, and to confirm their status as a full-time graduate student. Only full-time graduate students are eligible for scholarship support. ~~In accordance with OCGS's position, full-time graduate students are encouraged to limit time spent on employment and may not be employed more than 10 hours/week (on average in a term) for work that is paid through McMaster University. University-related employment should be limited to an average of ten hours per week for full-time students, and full-time students are expected to limit time spent on employment both inside and outside the University.~~

Exceptions to this rule are possible with the approval of the School of Graduate Studies. ~~A student seeking an exception must provide a study plan that has been approved by the departmental graduate studies committee or its equivalent. A full-time student seeking an exception must provide a study plan that has been approved by the departmental graduate studies committee or its equivalent, along with a written statement from the student's supervisor.~~ Ph.D. students who seek an exemption from the rule must arrange for a supervisory committee meeting, with a report of that meeting submitted to the Graduate School, every four months during the time they are employed beyond ten hours per week. No exceptions totalling 500 hours or more in a single academic year will be approved.

All active graduate students other than full-time graduate students as defined above are part-time graduate students.

2.5.1 Averaging of Letter Grades

With the exception of courses in the M.B.A. Program, grades in graduate courses are reported as letter grades. However, instructors may record grades for individual components of the course either as letter or numerical grades. The averaging of letter grades assigned to individual components of a course must be done by using the McMaster 12-point scale, as follows: A+ = 12, A = 11, A- = 10, B+ = 9, B = 8, B- = 7, C+ = 6, C = 5, C- = 4, D+ = 3, D = 2, D- = 1, F = 0. Further, all .5 marks should be rounded up. The passing grades for courses at the graduate level are A+, A, A-, B, and B- (except in the M.B.A. program, which uses a different scale).

Graduate students enrolled in undergraduate courses will be subject to some set of passing grades as courses at the graduate level.

Example of Weighted Average Calculation, using the grade points and units for courses completed:

Course Grade	Grade Points		Course Units	
A-	10	x	6	= 60
B	8	x	6	= 48
B+	9	X	3	= 27
F	0	X	3	= 0
Total			18	135
				To calculate Average: $135 \div 18 = 7.5$

Note: 6-unit course is equivalent to a full course
3-unit course is equivalent to a half course

Note: McMaster University's Policy on Graduate Course Outlines is available at:
<http://www.mcmaster.ca/policy/faculty/Conduct/GraduateCourseOutlines.pdf>

2.5.3 Course Categories

Courses can be designated as being in one of the six categories:

M (Count towards the Master's degree requirements)

This category identifies the courses that are to count towards the Master's degree requirements (including any additional graduate requirements or undergraduate courses specified by the supervisory committee or Department Chair). The passing grades for an M course are A+, A, A-, B+, B, and B- (except in the M.B.A. program, which uses a different scale).

D (Count towards the Doctoral degree requirements)

This category identifies the courses that are to count towards the Doctoral degree requirements (including any additional graduate requirements or undergraduate courses specified by the supervisory committee or Department Chair). The passing grades for a D course are A+, A, A-, B+, B, and B-.

EC (Extra Course)

This category identifies courses that the student is taking with the approval of the supervisor but that are not necessary to the student's current degree program. If a failing grade (i.e. less than B- in a graduate course or less than D- in an undergraduate course) is received in a course taken as Extra, the courses (and grade) will not appear on the student's transcript unless because of academic dishonesty. Students may petition to change the designation of an EC course to an M or D course prior to the deadline to drop a course provided that this change is supported by the supervisor and program. Changes of designation after the drop date will not be approved. Courses designated as EC may subsequently be counted towards graduate degree requirements and the course designation changed to M or D, if approved by the Faculty Admissions and Study Committee.

Courses that are required by the supervisory committee or the Department Chair as additional requirements in excess of the stated minimum for the program must be designated as M or D.

DIP (Diploma Course)

This category identifies courses that are to count towards the requirements for a diploma. The passing grades for a DIP course are A+, A, A-, B+, B, and B-.

CER (Certificate Course)

This category identifies courses that the student is taking as individual courses not counting towards the requirements for a diploma. The passing grades for a CER course are A+, A, A-, B+, B, and B-.

AUD (Audit Course)

Graduate courses are not normally open to "auditors" who attend a course without seeking academic credit. Under some circumstances, however, graduate students may audit a graduate

course. This requires the written permission of the course instructor and the student's supervisor (or graduate advisor if no supervisor exists) on the form entitled 'Audit Add Form'. Permission must be obtained prior to the deadline for adding courses. Upon completion of the course, and subject to confirmation from the instructor that his/her expectations regarding the student's participation were met (usually that the student attended at least 80% of the course), a transcript notation of "Audit" for that course will be recorded. No other grade will be assigned. Enquiries should be directed to the instructor or the Chair of the Department offering the course.

A fee may be charged for a course taken for audit if the graduate student is in a part-time program. See Section 5.1, Fees for Graduate Students, for the fee schedule.

2.5.5 Required Course and Training for All Graduate Students

All graduate students, including part-time students, must complete the course *SGS #101-Academic Research Integrity and Ethics* within the first twelve months after their admission to graduate studies at McMaster. The purpose of this course is to ensure that the standards and expectations of academic integrity and research ethics are communicated early and are understood by incoming students. ~~A graduate student may not obtain a graduate degree at McMaster without having passed this course. All students are required to take and pass SGS #101 during their first academic year at McMaster. Students may not graduate or register in subsequent academic year without having successfully completed this course. In the event that a student fails this course, they must retake it at the earliest opportunity.~~ The course description for *SGS #101* may be found in Section 11.

All graduate students are required to complete appropriate training required to complete their research and studies (health and safety training, ethics training, biosafety training, etc.), as determined by their home Department or Program. All graduate students also are required to complete training on the Accessibility for Ontarians with Disabilities Act (AODA), which can be completed on-line [www.mcmaster.ca/accessibility]. Having an understanding of how we can identify and reduce attitudinal, structural, information, technological, and systemic barriers to persons with disabilities is core to McMaster University's commitment to supporting an inclusive community in which all persons are treated with dignity and equality, and completion of AODA training is critical as McMaster's graduates move forward in their varied, chosen professions. Students may not graduate or register for subsequent years in their program until they have completed their required training.

2.6 SUPERVISION

It is the responsibility of the department/program to ensure that every graduate student has, at all times, a faculty advisor or a properly constituted supervisory committee. The department/program should ensure that the members of a supervisory committee are sufficiently competent and experienced to serve at the required level. In identifying a supervisory committee, the department/program should consider the following, among other things: the balance of the committee by rank and experience; publications and other demonstrations of competence in scholarship or research on the part of the supervisor. Supervisory committees for Ph.D. candidates shall be reviewed annually by the department/program.

While the supervisor and student have a mutual obligation to meet on a regular basis, the department/program shall ensure there is a formal regular meeting of each Ph.D. supervisory committee at least once within the academic year (September-August), and possibly more often, to discuss the student's progress. Each Ph.D. supervisory committee must report annually on the student's progress and the department/program chair must forward such reports to the School of Graduate Studies. The report formally documents the supervisory committee's assessment of the progress of the student's program.

The department/program should prepare a set of guidelines for supervisors and students. The guidelines should deal with the selection and functioning of supervisory committees and should cover the joint responsibilities of faculty members and graduate students. The guidelines may be attached to or incorporated in department/program handbooks which give regulations supplementary to those in the Calendar. Items relevant to graduate supervision should be approved by the appropriate Faculty Committee on Graduate Admissions and Study. A copy of the guidelines shall be given to each faculty member and each graduate student.

It is possible to change supervisors or the membership of a supervisory committee, although this is not the norm. If the direction of the research changes, membership can be changed by mutual consent of the parties involved. Supervisors and/or supervisory committee members may not resign without the department's/program's approval. ~~Changing— A change in supervisor is~~ at the discretion of the department/program, not the student or supervisor.

If a student feels that she/he is receiving unsatisfactory supervision, he/she should consult the Department/Program Chair or Graduate Advisor. The appropriate person will be identified in the procedures for making changes in supervisory committee membership, specified in the departmental guidelines for graduate work. If this avenue is not sufficient, the student is encouraged to speak with the appropriate Associate Dean of Graduate Studies about the problem.

2.7 THESES

2.7.1 General

No research for the Ph.D. or other graduate degrees at McMaster may be secret or classified. All theses will be available to borrowers in the University Library (See regulations governing microfilming).

The dissertation or thesis will be a coherent document that provides a complete and systematic account of the research accomplished by the writer. If some of the research undertaken expressly for the degree has previously been published or prepared for publication as one or more journal articles, or parts of books, those items may be included within the thesis under the following conditions: there must be material preceding the article or articles which sets the context for the work, and material in an introduction or conclusion that draws out the overall implications of the work; if there is multiple authorship of the separate articles, there must be a preface to the thesis that documents clearly the student's contribution to each of the papers and the student's contribution to the originality of the work, thereby clarifying in what way this work becomes the student's thesis. When journal articles are used in the thesis some reformatting may be required since all pages in the thesis must be 8 ½" x 11" in size, and the thesis must be successively paginated. The National Library of Canada requires that permission from the publisher be obtained when a published article is to be used in a thesis. A more detailed statement of the University's regulations regarding the inclusion of previously published/prepared material in theses is available from the School of Graduate Studies. Students intending to use this option must obtain permission from their supervisory committee.

Arrangements and expenses for typing the thesis are the responsibility of the student. The School of Graduate Studies provides instructions regarding thesis format and methods of thesis reproduction. These instructions are described in the handbook, Guide for the Preparation of Master's and Doctoral Theses. The handbook is available on the School of Graduate Studies website (<http://graduate.mcmaster.ca/images/files/graduate/ThesisGuide.pdf>). Departments may issue special instructions concerning the proper forms of graphs, tables, maps and diagrams. Accepted forms of bibliographical reference in the particular discipline and other matters of format should be discussed with the thesis supervisor. Students may also refer to the instructions set forth in Kate L. Turabian's A Manual for Writers of Term Papers, Theses, and Dissertations (6th ed., 1996). Theses must be presented in a format acceptable to the School of Graduate Studies.

Doctoral students and their supervisors should keep in mind that theses of extraordinary length are to be discouraged. The preparation of a lengthy Ph.D. thesis almost certainly extends the time that the student takes to complete his or her degree. It entails other costs as well, notably a greater cost to the student for reproduction and binding, and greater difficulty in arranging for external examiners and members of thesis defense committees. As a general rule, doctoral students are urged to limit their theses to no greater length than three hundred (300) manuscript pages. The thesis will be a coherent work prepared as an electronic document (an e-thesis) that provides a complete and systematic account of the research accomplished by the writer. A printed paper version is no longer acceptable for thesis defense or for storage in the university library after a successful defense. A Doctoral student may prepare and defend either a standard e-thesis (see 'GUIDE FOR THE PREPARATION OF MASTER'S AND DOCTORAL THESES', May 2011; http://graduate.mcmaster.ca/images/files/graduate/ThesisGuide_Final_May2011.pdf) or a "sandwich" e-thesis at oral examination (also known as the 'thesis defense'). Normally, a Master's student may submit only a standard e-thesis (see 'Thesis Guide' section 5.2). Each department or program offering

graduate work is wholly responsible for setting up oral examinations for Master's candidates (see 'Thesis Guide' Sections 6.1 and 6.2). The School of Graduate Studies is wholly responsible for arranging all Ph.D. oral examinations (see 'Thesis Guide' Sections 6.3, 6.4, and Appendix 1).

Starting on May 1, 2011, all candidates for Master's or Doctoral degrees who have successfully completed their oral examinations and who have made all required revisions to the satisfaction of their supervisor must upload an electronic version of their final e-thesis to 'Digital Commons' (<http://digitalcommons.mcmaster.ca>; see section 2.7.3 below). The e-thesis must be presented in a format acceptable to the School of Graduate Studies. Having filed the e-thesis to Digital commons, the student may choose to purchase printed and bound copies for their personal use or for presentation. Details of selected companies who are organized to print and bind the thesis are listed on the School of Graduate Studies website (<http://www.mcmaster.ca/graduate>). The cost of printing and binding will be borne by the student.

No research for the Master's or Ph.D. degrees at McMaster may be secret or classified. All e-theses will be available to readers through Digital Commons.

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Individual Departments or graduate programs may issue special instructions concerning the expected forms of graphs, tables, maps, diagrams, and sound and video files which may be included within the e-thesis. Accepted forms of bibliographical reference in the particular discipline and other matters of format should be discussed with the thesis supervisor. Students may also refer to the instructions set forth in Kate L. Turabian's A Manual for Writers of Term Papers, Theses, and Dissertations (7th ed., 2007). In those instances where an examiner requests a printed copy of the thesis, it is the student's responsibility to produce a print version well before the oral examination.

Doctoral students and their supervisors should keep in mind that theses of extraordinary length are to be discouraged. The preparation of a lengthy Ph.D. thesis almost certainly extends the time that the student takes to complete his or her degree. As a general rule, doctoral students are urged to limit their theses to no greater length than three hundred (300) pages of text (Master's thesis to less than 200 pages).In cases where students and their supervisors believe that responsible scholarly treatment of the thesis topic requires substantially greater length than that specified above, a written approval from the appropriate Associate Dean of Graduate Studies must be obtained before the external examiner is contacted.

2.7.2 Response Times for Theses

Supervisory committees should respond to the draft of a Ph.D. thesis within 2 months. Providing comments on individual chapters will take proportionately less time. Very long theses or chapters may take more time. There are busy periods within the academic year when the time taken to provide comments might be a bit longer than this norm. However, in no case should the response time exceed 3 months.

For Master's theses the corresponding times are 1 month and 2 months. The supervisor should respond to the pre-defense copy of the Master's thesis within 2 months.

2.7.3 Microfilming and Publication of Theses at McMaster University

~~The University requires that every thesis for a Ph.D. degree be published substantially as it is accepted. After all other requirements for the degree have been met publication is accomplished through the University Library. Once the student submits their final thesis via Digital Commons to the University Library, the Library and Archives of Canada are able to harvest the thesis directly into the national archive. A Non-Exclusive Licence signed by the author and submitted to the School of Graduate Studies will be sent to the Library and Archives of Canada.~~

~~At the conclusion of the thesis oral defense every Master's and Ph.D. student is required to sign a licence to the University. The author shall have the right to request postponement for up to one year of publication by the Library and Archives of Canada and/or deposit of the thesis in the library, in order to protect any right to immediate commercial publication or to permit a patent application to be made.~~

The University requires that every successfully-defended thesis for a Master's or a Ph.D. degree shall be published substantially as it was approved at the thesis defense; minor changes to be made after the defense will be supervised by the student's supervisor. When all requirements for the degree have been met, publication of the final e-thesis is conducted through 'Digital Commons' which is managed by the University Library. Once the student has submitted their final e-thesis and the e-thesis has been published to Digital Commons, a non-exclusive License (signed by the author and submitted to the School of Graduate Studies) will be sent to Library and Archives of Canada to allow Library and Archives of Canada to access the e-thesis directly. At the conclusion of a successful thesis defense, each Master's and Ph.D. student is required to sign a license to the University. The author shall have the right to request postponement of publication of the thesis for up to six months by the University Library and by Library and Archives of Canada, in order to protect any right to immediate commercial gain or to permit a patent application to be made. Requests for postponement should be directed to the Associate Vice-President & Dean of Graduate Studies who will make a determination of whether or not a delay is warranted.

3.3 THESIS

A thesis may be submitted at any time. The final date for submitting a thesis to the department for Autumn or Spring Convocation is found in the Sessional Dates Section. The thesis will be examined by a committee of not fewer than 3 members (including the supervisor and an examiner external to the supervisory committee) who will be appointed by the department/program chair. ~~—T; the thesis will be defended by the candidate in an oral examination before this committee and such other members as may be appointed by the department chair.~~ The Associate Vice-President & Dean of Graduate Studies may appoint members to these committees. The time of the defense will be set by the ~~department~~ department/program chair; normally this will be about two weeks after the completed thesis (as an electronic file; see section 2.7 above) has been submitted to the department for examination.

~~One copy of the thesis must be filed with the School of Graduate Studies via Digital Commons. The student may have copies suitably bound at the request of their department, supervisor or at their own discretion and will be responsible for distribution of any bound copies. After a successful examination and all requested changes have been made, the student will upload the final e-thesis to Digital Commons (see section 2.7). The student may wish to have printed copies of the final thesis suitably bound for personal use or for presentation. The student will be responsible for the cost and distribution of any bound copies.~~

4.4 THESIS

~~A candidate must present a thesis which embodies the results of original research and mature scholarships. Before preparing the final version of the thesis the student must be authorized to do so by the supervisory committee.~~

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~~When a majority of the supervisory committee have approved the final version of the thesis, it may be submitted to the School of Graduate Studies for examination. The oral defense will not be set up until the report from the supervisory committee has been received and the date of the defense established.~~

A candidate must present a thesis which embodies the results of original research and mature scholarship. The student must be authorised by the supervisory committee before preparing the final version of the thesis for oral defense. Normally the thesis will be distributed to committee members and examiners in an electronic format (see the e-thesis; section 2.7).

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When a majority of the supervisory committee have approved the final version of the thesis, it may be submitted to the School of Graduate Studies for examination. The oral defense will not be arranged by the Thesis Coordinator until the supervisory committee has submitted a report approving the thesis for defense and an agreed date of defense has been received.

Selection of the Examining Committee

Selection of an external examiner is the responsibility of the Associate Vice-President & Dean of Graduate Studies. To aid in that selection, the supervisory committee is required to provide, through the Chair of the Department (or equivalent), the names and contact information for three potential examiners, at least one month prior to the submission of the thesis. The nominees must not have primary appointments at McMaster University, and they must be at arm's length* from all members of the supervisory committee and the student. To maintain this distance, all communication with a potential or selected external examiner that is related to the examination and defense of the student must originate only from the School of Graduate Studies. The external examiner will provide a written report to the Associate Vice-President & Dean of Graduate Studies judging whether the written thesis is satisfactory for defense or not. The external examiner will provide this assessment regardless of their ability to be present at the defense.

The examining body will consist of the following members: the student's supervisor, two representatives of the department selected by the chair (normally from the supervisory committee), and an external examiner. ~~When the external examiner cannot attend the Thesis Oral Defense in person or through tele- or video conferencing, there will be one additional representative of the faculty at large.~~ If the external examiner cannot attend the oral defense, either in person or through tele- or video-conferencing, one additional representative of the faculty at large will be selected as an attending external examiner.

~~Regardless of whether he/she plans to attend an oral defense, the external examiner will provide a written report to the Associate Vice-President & Dean of Graduate Studies judging whether the written thesis is satisfactory for defense or not.~~

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The definition of 'arm's length' is as follows: The nominees should not have been a research supervisor or student of the supervisor or the student within the last 6 years; should not have collaborated with the supervisor or the student within the past 6 years, or have made plans to collaborate with these individuals in the immediate future. There also should be no other potential conflicts of interest (e.g., personal or financial). External examiners should not have been employed by or affiliated with the student's or supervisors' Department within the past 6 years, nor expect to become employed in the Department ~~soon~~in the immediate future.

Scheduling and Conducting the Oral Examination (Oral Defense)

If the external examiner approves the thesis for oral examination, an oral defense will be convened by the Associate Vice-President & Dean of Graduate Studies, chaired by herself or her delegate and conducted by all members of the examining committee. Quorum for the examination will be the Chair of the examining committee plus four examiners. At the discretion of the Chair, the ~~Thesis Oral Defense~~oral defense will be open to members of the university community and the public who wish to attend as observers. The examination proper will be conducted only by the members of the examining committee. When they have completed their questions, the Chair may permit a few minutes of questioning by visitors. Normally the student will attempt to answer visitors' questions, but these are not to be considered part of the examination for the degree. Observers will withdraw prior to the committee's deliberations on the student's performance at the defense.

If the external examiner does not approve the thesis for an oral defense, the appropriate Associate Dean will convene a meeting with the student's supervisory committee to discuss the external examiner's report. The supervisory committee and student will make every ~~best~~ effort to address the concerns of the examiner, and the revised thesis may be re-assessed again by the external examiner. In rare cases, a new external examiner may be appointed by the Associate Vice-President and Dean of Graduate Studies.

After a discussion of the examination, the Chair will ask for a vote on each of the two questions, the acceptance or rejection of the **written document** and the success or failure of the **defense**.

~~If there are two or more negative or abstaining votes on either question, with at least one of these votes being from a member of the supervisory committee, the candidate is deemed to have failed this defense, and a reconvened oral defense must be held at a later date. The candidate should be told as clearly as possible what he/she must do to improve either or both the written thesis and his/her defense of it. The reconvened defense is the candidate's final opportunity to complete the degree. If the document or the defense of it is deemed to have failed a second time, that decision is final, and is not open to appeal. Membership on the reconvened examining committee should be the same as that for the original defense, except that one or two substitutions are permitted in order to expedite scheduling of the reconvened~~

~~defense.~~ If the examiners approve both the written thesis and the defense, the Chair will ask the examiners to complete the Examination Report by initialling appropriately. The student will be invited back to the examination room for congratulations by the committee. In the event the written thesis is approved conditionally, the ~~Supervisor~~ Chair of the examination committee is responsible for ensuring that (1) the candidate is advised of the conditions in writing, (2) the candidate receives and understands the form used to confirm the 'Final Thesis Submission form' to be used by the Supervisor to confirm that the conditions have been met, and (3) the supervisor is also aware of the form. The Chair will complete and sign the Examination Report and return it to the School of Graduate Studies.

~~Following the committee's decision, the Chair will secure the written votes of each examiner, sign the report form, and return it to the School of Graduate Studies.~~

However, if there are two or more negative or abstaining votes on either question, with at least one of these votes being from a member of the supervisory committee, the candidate will be deemed to have failed the defense, and a reconvened oral defense must be held at a later date. The candidate should be told as clearly as possible by the Chair and the examining committee what he/she must do to improve the written thesis and/or the defense of it. The reconvened defense is the candidate's final opportunity to complete the degree. Membership on the reconvened examining committee should be the same as that for the original defense, except that one or two substitutions are permitted in order to expedite scheduling of the reconvened defense. If the written thesis, or the defense of it, fails a second time, that decision is final, and is not open to appeal.

After a successful ~~defence~~ defense, the candidate must correct any errors detected by the readers to the satisfaction of the Supervisor and then submit an electronic copy to the School of Graduate Studies via Digital Commons. The fee for archiving the thesis is paid by the student.