



<p>1.0 Degree Title Please specify the two degrees for concurrent degree programs</p> <div style="border: 1px solid black; padding: 2px; width: 90%;">Master of Science</div>	<p>2.0 Administering Faculty or GPS</p> <div style="border: 1px solid black; padding: 2px; width: 90%;">Graduate and Postdoctoral Studies</div>
<p>1.1 Major (Subject/Discipline) (30-char. max.)</p> <div style="border: 1px solid black; padding: 2px; width: 90%;">Experimental Surgery</div>	<p>Offering Faculty & Department</p> <div style="border: 1px solid black; padding: 2px; width: 90%;">Experimental Surgery, Medicine and Health Sciences</div>
<p>1.2 Concentration (Option) (30 char. max.)</p> <div style="border: 1px solid black; padding: 2px; width: 90%;">Non-Thesis - Oncology</div>	<p>3.0 Effective Term of Implementation (Ex. Sept. 2019 or 201909) Term</p> <div style="border: 1px solid black; padding: 2px; width: 90%;">202209</div>
<p>1.3 Complete Program Title (info from boxes 1.0+1.1+1.2+5.2)</p> <div style="border: 1px solid black; padding: 2px; width: 90%;">MSc Experimental Surgery; Non-Thesis - Oncology</div>	

4.0 Rationale and Admission Requirements for New Program/Concentration

In response to increasing student interest in pursuing an MSc in oncology, the Department of Experimental Surgery is partnering with the Gerald Bronfman Department of Oncology to develop this new MSc Non-Thesis Program. It combines the program requirements for the 30-credit Graduate Diploma in Oncology with 15 credits of courses relevant to the Department of Experimental Surgery's Master's programs. Interested students will initially enter the program via a transfer from the Graduate Diploma in Oncology. Those registered full-time would apply for a transfer during the winter semester and would be given a conditional acceptance, final approval being granted once they successfully complete the course requirements for the Diploma. Students who are enrolled part-time would apply for a transfer after completing at least 21 credits and would be given a conditional acceptance, with final approval being granted once they successfully complete the course requirements for the Diploma. Admissions criteria will be the same as the existing M.Sc. Experimental Surgery (Non-Thesis).

5.0 Program Information
Indicate an "x" as appropriate

<p>5.1 Program Type</p> <p>Bachelor's Program</p> <p><input checked="" type="checkbox"/> Master's</p> <p>M.Sc.(Applied) Program</p> <p>Dual Degree/Concurrent Program</p> <p>Certificate</p> <p>Diploma</p> <p>Graduate Certificate</p> <p>Graduate Diploma</p> <p>Professional Development Cert</p> <p>Ph.D. Program</p> <p>Doctorate Program (Other than Ph.D.)</p> <p>Self-Funded/Private Program</p> <p>Off-Campus Program</p> <p>Distance Education Program</p> <p>Other (Please specify)</p>	<p>5.2 Category</p> <p>Faculty Program (FP)</p> <p>Major</p> <p>Joint Major</p> <p>Major Concentration (CON)</p> <p>Minor</p> <p>Minor Concentration (CON)</p> <p>Honours (HON)</p> <p>Joint Honours Component (HC)</p> <p>Internship/Co-op</p> <p>Thesis (T)</p> <p><input checked="" type="checkbox"/> Non-Thesis (N)</p> <p>Other</p> <p>Please specify</p> <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<p>5.3 Level</p> <p>Undergraduate</p> <p>Dentistry/Law/Medicine</p> <p>Continuing Studies (Non-Credit)</p> <p>Collegial</p> <p><input checked="" type="checkbox"/> Masters & Grad Dips & Certs</p> <p>Doctorate</p> <p>Post-Graduate Medicine/Dentistry</p> <p>Graduate Qualifying</p> <p>5.4 Requires Centrally-Funded Resources</p> <p>Yes ___ No <input checked="" type="checkbox"/></p>
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6.0 Total Credits

45

7.0 Consultation with Related Units

Yes	<input checked="" type="checkbox"/>	No	
Financial Consult	Yes	No	<input checked="" type="checkbox"/>

Attach list of consultations.

8.0 Program Description (Maximum 150 words)

The M.Sc. in Experimental Surgery; Non-Thesis - Oncology offers graduate-level training in surgical research related to oncology and provides students the opportunity to gain a better understanding of the broad range of disciplines in cancer research and care. In addition to an oncology practicum that focuses on a research project in a chosen cancer research discipline, there also will be a surgery research project with a focus on cancer.

9.0 List of proposed new Program/Concentration

If new concentration (option) of existing program, a program layout (list of all courses) of existing program **must** be attached.

Proposed program (list courses as follows: Subj Code/Crse Num, Title, Credit Weight under the headings of: Required Courses, Complementary Courses, Elective Courses)

Master of Science (M.Sc.) Experimental Surgery (Non-Thesis- Oncology) (45 Credits)

Required Courses (24 credits)

EXSU 500 Artificial Intelligence in Medicine (3 cr.)
EXSU 602 Knowledge Management 2 (3 cr.)
EXSU 623 SURGERY Research Project 2 (6 cr.)
ONCO 610D1 Fundamentals of Oncology and Cancer Research (3 cr.)
ONCO 610D2 Fundamentals of Oncology and Cancer Research (3 cr.)
ONCO 620 Best Practices in Biomedical Research (3 cr.)
ONCO 630 Oncology Practicum (3 cr.)

Complementary Courses (6 credits)

3 credits selected from:

EDPE 575 Statistics for Practitioners (3 cr.)
EPIB 507 Biostats for Health Sciences (3 cr.)
EXSU 606 Statistics for Surgical Research (3 cr.)

OR

3 credits of a research design or statistics course at the 500 level or higher

3 credits selected from:

BMDE 653 Patents in Biomedical Engineering. (3 cr.)
BMDE 654 Biomedical Regulatory Affairs-Medical Devices (3 cr.)
BMDE 655 Biomedical Clinical Trials-Medical Devices (3 cr.)
EDPE 637 Issues in Health Professions Education (3 cr.)
EDPE 687 Qualitative Methods in Educational Psychology (3 cr.)
EDPH 689 Teaching and Learning Higher Education (3 cr.)
EPIB 521 Regression Analysis for Health Sciences (3 cr.)
EPIB 681 Global Health: Epidemiological Research (3 cr.)
EXMD 609 Cellular Methods in Medical Research (3 cr.)
EXMD 610 Molecular Methods in Medical Research (3 cr.)
EXSU 505 Trends in Precision Oncology (3 cr.)
EXSU 601 Knowledge Management 1 (3 cr.)
EXSU 603 Surgical Education Foundations (3 cr.)
EXSU 605 Biomedical Research Innovation (3 cr.)
EXSU 620 Surgical Innovation 1 (3 cr.)
EXSU 684 Signal Transduction (3 cr.)

10.0 Approvals			
Routing Sequence	Name	Signature	Meeting Date
Department	Dr. Liane Feldman and Dr. Fackson Mwale	<i>L. Feldman</i> <i>f. mwale</i>	23.1.22
Curric/Acad Committee	Melissa Vollrath- FCC Chair	<i>Melissa Vollrath</i>	February 25, 2022
Faculty 1	Aimee Ryan - Assoc Dean		February 25, 2022
Faculty 2			
Faculty 3			
CGPS			
SCTP			
APC			
Senate			
Submitted by			
Name	Jake Barralet	To be completed by ES:	
Phone		CIP Code	
Email	Jake.barralet@mcgill.ca		
Submission Date	24.1.22		

REMINDERS:

*Box 5.4 – Must be completed; see section 6.5.4 within the New Program Guidelines at:

<https://www.mcgill.ca/sctp/guidelines>.

**All new program proposals must be accompanied by a 2-3 page support document.

[continued]

FMED 525 Foundations of Translational Science (3 cr.)
FMED 619 Program Management in Global Health and Primary Health Care (3 cr.)
ONCO 611 Proteomics for Precision Medicine (3 cr.)
ONCO 615 Principles and Practice of Clinical Trials (3 cr.)
ONCO 625 Quality Improvement Principles and Methods (3 cr.)
ONCO 635 Qualitative and Psychosocial Health Research (3 cr.)
ONCO 645 Seminars in Global Oncology (3 cr.)
PHGY 517 Artificial Internal Organs (3 cr.)
PHGY 518 Artificial Cells (3 cr.)
PHGY 550 Molecular Physiology of Bone (3 cr.)
PPHS 511 Fundamentals of Global Health (3 cr.)
PPHS 528 Economic Evaluation of Health Programs (3 cr.)
PPHS 529 Global Environmental Health and Burden of Disease (3 cr.)

Elective Courses (15 credits)

15 credits at the 500 level or higher can be chosen from the course list above or from other courses. The courses should have a surgery or oncology related theme. Selections to be approved by the director of the program or adviser.

*See below for existing program.

EXISTING PROGRAM: Master of Science (M.Sc.) Experimental Surgery (Non-Thesis) (45 credits)

Required Courses (12 credits)

EXSU 500 Artificial Intelligence in Medicine (3 cr.)
EXSU 602 Knowledge Management 2 (3 cr.)
EXSU 623 Surgery Research Project (6 cr.)

Complementary Courses (24 credits)

3 credits selected from:

EDPE 575 Statistics for Practitioners (3 cr.)
EPIB 507 Biostats for Health Sciences (3 cr.)
EXSU 606 Statistics for Surgical Research (3 cr.)

OR

3 credits of a research design or statistics course at the 500 level or higher

3 credits selected from:

EXSU 603 Surgical Education Foundations (3 cr.)
FMED 525 Foundations of Translational Science (3 cr.)

6 credits selected from the following:

EDPE 637 Issues in Health Professions Education (3 cr.)
EDPH 689 Teaching and Learning in Higher Education (3 cr.)
EPIB 521 Regression Analysis for Health Sciences. (3 cr.)
EXSU 505 Trends in Precision Oncology (3 cr.)
EXSU 620 Surgical Innovation 1 (3 cr.)
EXSU 621 Surgical Innovation 2 (3 cr.)
PPHS 528 Economic Evaluation of Health Programs (3 cr.)

Note: Students either take EDPE 637 and EDPH 689; or EPIB 521 and PPHS 528; or EXSU 620 and EXSU 621.

12 credits selected from:

BMDE 653 Patents in Biomedical Engineering (3 cr.)
BMDE 654 Biomedical Regulatory Affairs-Medical Devices (3 cr.)
BMDE 655 Biomedical Clinical Trials-Medical Devices (3 cr.)
DENT 669 Extracellular Matrix Biology (3 cr.)
EDPE 637 Issues in Health Professions Education (3 cr.)
EDPE 687 Qualitative Methods in Educational Psychology (3 cr.)
EDPH 689 Teaching and Learning in Higher Education (3 cr.)
EPIB 681 Global Health: Epidemiological Research (3 cr.)
EXMD 609 Cellular Methods in Medical Research (3 cr.)
EXMD 610 Molecular Methods in Medical Research (3 cr.)
EXSU 501 Medical Technology Internship 1 (6 cr.)
EXSU 601 Knowledge Management 1 (3 cr.)
EXSU 605 Biomedical Research Innovation (3 cr.)
EXSU 620 Surgical Innovation 1 (3 cr.)
EXSU 621 Surgical Innovation 2 (3 cr.)
EXSU 622D1 Surgery Research Project 1 (6 credits)
EXSU 622D2 Surgery Research Project 1 (6 credits)
EXSU 684 Signal Transduction (3 cr.)
FMED 619 Program Management in Global Health and Primary Health Care (3 cr.)
PHGY 518 Artificial Cells (3 cr.)
PHGY 550 Molecular Physiology of Bone (3 cr.)
PPHS 511 Fundamentals of Global Health (3 cr.)
PPHS 529 Global Environmental Health and Burden of Disease (3 cr.)

ELECTIVES (9 credits)

9 credits taken from the 500-, 600- or 700-level courses at the University, which can include courses from the list above, will be taken with the approval of the director of the program/adviser.

APPENDIX 1

CONSULTATION REPORT FORM
RE PROGRAM PROPOSALS

DATE:

TO: Dr. Eduardo Franco
Chair, Gerald Bronfman Department of Oncology

FROM: Jake Barralet
Vice Chari (Research), Dept Surgery

The attached proposal has been submitted to the Curriculum Committee, and it has been decided that your department should be consulted.

Program Title:
MSc Experimental Surgery – Non-thesis (Concentration in Oncology)

Would you be good enough to review this proposal and let me know as soon as possible, on this form, whether or not your department has any objections to, or comments regarding, the proposal. Specifically, a course [or courses] taught by your department that has [have] been included in the program's list of courses.

 X NO OBJECTIONS SOME OBJECTIONS

COMMENTS:

Approval for incorporating the component courses of the Graduate Diploma in Oncology into the MSc Experimental Surgery – Non-thesis Oncology Concentration program thereby permitting transfer, and for use of the following courses in their concentration.

- ONCO 610 Fundamentals of Oncology and Cancer Research
- ONCO 611 Proteomics for Precision Medicine
- ONCO 615 Principles and Practice of Clinical Trials
- ONCO 620 Best Practices in Biomedical Research
- ONCO 625 Quality Improvement Principles and Methods
- ONCO 630 Oncology Practicum
- ONCO 635 Qualitative and Psychosocial Health Research
- ONCO 645 Seminars in Global Oncology

Signature:



Date:

January 20, 2022

M.Sc., Experimental Surgery (Non-Thesis): Oncology (45 credits)

In response to increasing student interest in pursuing an M.Sc. in Oncology, the Department of Experimental Surgery is partnering with the Gerald Bronfman Department of Oncology to develop a new M.Sc. in Experimental Surgery (Non-Thesis) with a concentration in Oncology. The proposed program will combine elements from the M.Sc. in Experimental Surgery and the Graduate Diploma in Oncology. The Department of Experimental Surgery has extensive experience in running excellent concentrations in our M.Sc. (Thesis)—in areas such as Surgical Innovation, Surgical Outcomes, Surgical Education, and Digital Health Innovation. While we currently offer an M.Sc. in Experimental Surgery (Non-Thesis), which provides students with a broad range of courses and the opportunity to conduct a surgery-related research project, this would be the first non-thesis concentration.

Background: increasing complexity of treatment; broadening roles of surgeons

More than half a century after the Nixon Administration's National Cancer Act became law, cancer is still the second leading cause of death in the United States. The act, signaling the beginning of a 'war against cancer,' has yielded lifesaving therapies and treatments, mainly through an improved understanding of Biology. Cancer research has moved from being an all-out war against a single 'disease' to something more multidisciplinary, which includes acceptance of 'defeat' in the absence of effective or justifiable treatments, watching and waiting strategies, and the management of social, financial, and psychological aspects. Today, we accept that cancer is not one disease, but rather many different diseases. Large-scale tumour-sequencing projects have shown that each cancer-type can be broken down into a subtype of a subtype, and that each individual tumour has a unique molecular make-up. Furthermore, this molecular signature shifts as the cancer progresses and responds to treatment. In 1971, when the act was signed, only half of people diagnosed with cancer in the United States would live for more than five years. Today, the figure is two-thirds—less modest when one considers that the median age has increased by more than a decade in this time. Scientists have since recognized the value of early detection; in many countries there are early-detection programs for cancers in tissues, such as breast and colon. Less impressive is the disparity of benefit from the research that ensued. Many therapies are too expensive. For example, in the United States, 42 percent of people with cancer experience severe financial hardship within two years of their diagnosis. In many countries, innovative cancer therapies such as immunotherapies are out of reach for the majority. Indeed, last year, McGill appointed its first surgeon-scientist to study financial toxicity in our patients in Montreal.

According to a recent [report](#) (*Nature* **601**, 297 [2022]), the combination of technological advances and continued collaboration between basic and clinical researchers can sustain the momentum generated by the Act into the next 50 years—taking the field even further from the 1970s, when surgery and radiotherapy were the only treatments. Our proposed concentration is a first step towards providing training in surgery for surgeons, clinicians, and researchers who will be part of larger, more complex, and increasingly multidisciplinary treatment teams. For most patients, the surgical removal of tumours remains part of the treatment regime, and, like cancer research itself, it has progressed immensely from the 1970s, when most cancer patients had very little time remaining to prioritise the restoration of function. For example, the work of Profs. Carli and Gillis is world-leading in pre-habilitating patients before tumor resection and treatment. They have already been able to show, using clinical data, that complications and hospital stays can be reduced by simple cost-effective nutrition and exercise regimes. It is clear then that while certain topics remain core to oncology, the impact of cancers is reduced through multi-modality approaches and by having the

surgeon be part of the treatment team. Just as the complexity of the diseases themselves is now apparent, it is also now evident that we need surgeons (i.e., our residents) and other scientists to appreciate this complexity and be able to communicate effectively with a familiarity of current and emerging themes. This clear intersection is where the need for this new concentration arises.

Drivers

1. Overlapping interests of Surgery and Oncology Faculty

Of the 245 active research faculty in the Department of Surgery, at least nearly one-quarter practice and/or research in the fields of surgical treatment of tumours, surgical oncology, or cancer therapeutics and personalized oncology. Many more in Orthopaedics and Plastics specialize in post-tumor resection reconstruction—a sadly overlooked and under-prioritized aspect of cancer treatment that is becoming a more pressing problem as more and more members of our ageing population face the unwelcome reality of being cancer survivors. Many of these Surgery professors are cross-appointed in Oncology; similarly, many Oncology professors are cross-appointed in Surgery. Thus, we have a long and effective history of collaboration (e.g., the Experimental Surgery course ‘Precision Oncology’ is included in the Oncology Diploma program).

2. Student Demand

The Department of Oncology reached out to Experimental surgery to help develop an alternate graduation route for their students enrolled in their Graduate Diploma, as some had expressed disappointment at not being able to continue their studies or embark upon research. Similarly, the students of a quarter of our research supervisors are working in labs with an oncology-related theme. Following a series of consultations and meetings with Department Chairs, GPDs, Faculty, and the Dean of Graduate and Postdoctoral Studies, the development of a concentration was identified as an immediate priority.

3. Need to better prepare potential PhD researchers internally

PIs running research laboratories in both Oncology and Surgery have noted a recent decline in direct PhD applications from applicants with relevant skills or experience. In Surgery, we have been surprised to find that both the research project components and the variety of courses has given students more insight into what doing three to five years of a research degree actually entails. While this has caused some to realise that high-level research is not for them, a significant number have switched to this avenue: a quarter of our PhD intake now comes from the non-thesis program. In short, we feel that giving trainees the opportunity to learn more about the field, decide on a PhD supervisor and topic, and gain in-person lab experience, is a robust route for increasing interest and better matching students with a program.

Two-streamed approach to bolstering oncology training in surgery

In planning meetings between Oncology and Experimental Surgery, two main routes to collaboration in graduate training were identified:

1. The development of a concentration

We will be enabling students currently enrolled in the Graduate Diploma in Oncology to transfer to this new M.Sc. (non-thesis): Oncology concentration prior to graduating (for more details, see the New Program Proposal form). Consultation with current Diploma students suggests that about half are expected to enroll. The structure of the new Oncology option will facilitate the transfer, as the four (4) required courses that make up the option are also required for the diploma:

- ONCO 610D1 Fundamentals of Oncology and Cancer Research (3 credits)
- ONCO 610D2 Fundamentals of Oncology and Cancer Research (3 credits)
- ONCO 620 Best Practices in Biomedical Research (3 credits)
- ONCO 630 Oncology Practicum (3 credits)

Moreover, the number of elective courses in the M.Sc. (Non-Thesis) can house the Complementary courses in the Diploma.

We also anticipate that this program will attract students in surgery who wish to gain more oncology-specific training. A quarter of active research faculty work in oncology, and we anticipate interest from Residents in their research year, as well as students interested in interventional approaches to cancer treatment.

2. The development of a stackable Master's, consisting of the Diploma and a certificate in surgery

There are different appeals and advantages to both. We are starting with the Concentration, as it is the most straightforward and requires very little change to the existing M.Sc. (Non-Thesis) program. The only certificate currently offered in surgery is in Surgical Innovation. This was created for entrepreneurially-minded students, and has been taken by students in other programs (e.g., Ph.D. students in Engineering). While there is merit in such a stackable combination (indeed, innovation has a huge role to play in oncology), we also feel that innovation is not for everyone. Additionally, this specific certificate is very time demanding and assumes a pre-existing passion for the field, rather than a passive interest. Thus, while we will be presenting—in the coming months—a stackable option consisting of the Diploma stacked with the Certificate in Surgical Innovation, we will also be developing a new certificate in Surgical Sciences that will have broader appeal and will map more clearly onto the field of surgical oncology. Since this will require the development of new courses, as well as a new certificate, we have decided first to focus on the Oncology concentration.

Plan for introducing the concentration

1. Introductory Phase

Initially, the admissions route into the concentration will be through the Oncology Diploma only. The admission criteria will be the same as the existing M.Sc. in Experimental Surgery (Non-Thesis). This is in the absence of a functional stackable Master's (and pending its approval), and in order not to directly compete with our colleagues in Oncology. This trial period will allow us to stress test the concentration without having to develop a supporting structure. It will also give us some degree of control on enrolment numbers, allow us to gauge better the level of demand, and adapt to any unforeseen issues that students may have. In preparation for the 6-credit project component, we have already identified twenty (20) Surgery supervisors who are willing and able to mentor non-thesis Master's students in oncology-related projects. We anticipate processing five to eight (5-8) transfers from the Diploma to the proposed Concentration this summer—i.e., for a Fall 2022 start.

2. Approval of stackable Master's with two (2) certificate options

By next year, we anticipate having two options for Diploma students in Oncology to enter a stackable Master's—namely, a choice of either the Surgical Innovation Certificate or a Surgical Sciences Certificate (currently in development, as noted). This degree pathway was approved by Senate two years ago. However, to date, we are among the first in the Faculty of Medicine and Health Sciences to use this route. Students will be able to enrol in a graduate Diploma and graduate Certificate over the span of ten years, acquiring a Stackable Master's degree. It is a vital instrument in helping clinicians flexibly gain training and qualification during a busy work schedule.

The Concentration in Oncology and the stackable Master's will offer different student populations the means to attain equivalent qualifications through different pathways. We anticipate that the stackable route will be most attractive to part-time students, as it provides them up to 10 years to do the Graduate Certificate and Diploma and thus obtain their stackable Master's. We expect the Concentration, which offers a research project of 6 credits, to be of most interest to those who are considering a career in research.

3. Opening of general admission to the concentration

We expect to open the concentration to general and direct admission in Fall 2023, as the Diploma will be in high demand due to the stackable Master's route. This decision will be made in consultation and with the agreement of the Department of Oncology.

Management

A committee overseeing both the M.Sc. program and the stackable masters will be composed of the following:

- Jake Barralet (Vice-Chair (Research), Department of Surgery)
- Fackson Mwale (Graduate Program Director, Experimental Surgery)
- Luke McCaffrey (Graduate Program Director, Gerald Bronfman Department of Oncology)
- Gayle Shinder (Chair's Senior Advisor for Academic Programs, Gerald Bronfman Department of Oncology)
- Micha Huynh (Student Affairs Coordinator, Experimental Surgery)
- Student representative (TBD)