



**Faculty of Engineering, including Peter Guo-hua
Fu School of Architecture and School of Urban
Planning (Graduate)
Programs, Courses and University Regulations
2021-2022**

This PDF excerpt of *Programs, Courses and University Regulations* is an archived snapshot of the web content on the date that appears in the footer of the PDF.

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This publication provides guidance to prospects, applicants, students, faculty and staff.

- 1 . McGill University reserves the right to make changes to the information contained in this online publication - including correcting errors, altering fees, schedules of admission, and credit requirements, and revising or cancelling particular courses or programs - without prior notice.
- 2 . In the interpretation of academic regulations, the Senate is the final authority.
- 3 . Students are responsible for informing themselves of the University's procedures, policies and regulations, and the specific requirements associated with the degree, diploma, or certificate sought.
- 4 . All students registered at McGill University are considered to have agreed to act in accordance with the University procedures, policies and regulations.
- 5 . Although advice is readily available on request, the responsibility of selecting the appropriate courses for graduation must ultimately rest with the student.
- 6 . Not all courses are offered every year and changes can be made after publication. Always check the Minerva Class Schedule link at https://horizon.mcgill.ca/pban1/bwckschd.p_disp_dyn_sched for the most up-to-date information on whether a course is offered.
- 7 . The academic publication year begins at the start of the Fall semester and extends through to the end of the Winter semester of any given year. Students who begin study at any point within this period are governed by the regulations in the publication which came into effect at the start of the Fall semester.
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Note: Throughout this publication, "you" refers to students newly admitted, readmitted or returning to McGill.

Publication Information

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Enrolment Services

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1 Dean's Welcome

Welcome to Graduate and Postdoctoral Studies (GPS) at McGill. You are joining a community of world-class researchers and more than 10,000 graduate students in over 400 programs. GPS is here to support you from admissions through to graduation and beyond. McGill's approach to graduate education emphasises skills development; we cultivate your academic and professional growth through a variety of workshops, events and experiential learning opportunities. I invite you to consult the [GPS website](#) for information on the range of resources available to graduate students at McGill.

I would like to wish you all the best in your studies at McGill. We are here to make sure that you have the best possible experience.

Josephine Nalbantoglu, Ph.D.

Associate Provost (Graduate Education) and Dean, Graduate and Postdoctoral Studies

2 Graduate and Postdoctoral Studies

2.1 Administrative Officers

Administrative Officers

Josephine Nalbantoglu; B.Sc., Ph.D.(McG.)

Associate Provost (Graduate Education) and Dean (Graduate and Postdoctoral Studies)

Lorraine Chalifour; B.Sc., Ph.D. (Manit.)

Associate Dean (Graduate and Postdoctoral Studies)

Nathan Hall; B.A., M.A., Ph.D. (Manit.)

Associate Dean (Graduate and Postdoctoral Studies)

Russell Steele; B.S., M.S. (Carn. Mell), Ph.D. (Wash.)

Associate Dean (Graduate and Postdoctoral Studies)

2.2 Location

James Administration Building, Room 400

845 Sherbrooke Street West

Montreal QC H3A 0G4

Website: mcgill.ca/gps



Note: For inquiries regarding specific graduate programs, please contact the appropriate department.

2.3 Graduate and Postdoctoral Studies' Mission

The mission of Graduate and Postdoctoral Studies (GPS) is to promote university-wide academic excellence for graduate and postdoctoral education at McGill. GPS provides leadership and strategic direction across the university in close collaboration with the academic and administrative units, and the graduate and postdoctoral community.

3 Important Dates

For all dates relating to the academic year, consult mcgill.ca/importantdates.

4 Graduate Studies at a Glance

Please refer to [University Regulations & Resources](#) > *Graduate* > : [Graduate Studies at a Glance](#) for a list of all graduate departments and degrees currently being offered.

5 Program Requirements

Refer to [University Regulations & Resources](#) > *Graduate* > *Regulations* > : [Program Requirements](#) for graduate program requirements for the following:

- Master's Degrees
- Doctoral Degrees
- Coursework for Graduate Programs, Diplomas, and Certificates

6 Graduate Admissions and Application Procedures

Please refer to [University Regulations & Resources](#) > *Graduate* > : [Graduate Admissions and Application Procedures](#) for information on:

- Application for Admission
- Admission Requirements
- Application Procedures
- Competency in English

and other important information regarding admissions and application procedures for Graduate and Postdoctoral Studies.

7 Fellowships, Awards, and Assistantships

Please refer to [University Regulations & Resources](#) > *Graduate* > : [Fellowships, Awards, and Assistantships](#) for information and contact information regarding fellowships, awards, and assistantships in Graduate and Postdoctoral Studies.

8 Postdoctoral Research

Students must inform themselves of University rules and regulations and keep abreast of any changes that may occur. The *Postdoctoral Research* section of this publication contains important details postdoctoral scholars will require during their studies at McGill and should be periodically consulted, along with other sections and related publications.

8.1 Postdocs

Postdocs are recent graduates with a Ph.D. or equivalent (i.e., Medical Specialist Diploma) engaged by a member of the University's academic staff, including Adjunct Professors, to assist them in research.

Postdocs must be appointed by their department and registered with Enrolment Services in order to have access to University facilities (library, computer, etc.).

8.2 Guidelines and Policy for Academic Units on Postdoctoral Education

Every unit hosting postdocs should apply institutional policies and procedures for the provision of postdoctoral education and have established means for informing postdocs of policies, procedures, and privileges (available at mcgill.ca/gps/postdocs), as well as mechanisms for addressing complaints. For their part, postdocs are responsible for informing themselves of such policies, procedures, and privileges.

1. Definition and Status

- i. Postdoctoral status will be recognized by the University in accordance with Quebec provincial regulations as may be modified from time to time. The eligibility period for postdoctoral status is up to five years from the date when the Ph.D. or equivalent degree was awarded. A : *leave of absence* for parental or health reasons may extend the eligibility period. Leaves for other reasons, including vacation, do not impact the eligibility period.
- ii. Some McGill postdocs have dual status as both students and employees (unionized or non-unionized). Consult the [Graduate and Postdoctoral Studies website](#) for definitions of Postdoctoral Fellows, Postdoctoral Scholars and Postdoctoral Researchers.
- iii. Postdocs must conduct research under the supervision of a McGill professor (including Adjunct Professors), qualified in the discipline in which training is being provided and with the ability to fulfil supervisory responsibilities and act as a mentor for career development. Postdocs are expected to engage primarily in research with minimal teaching or other responsibilities.

2. Registration

- i. Postdocs must *register* annually with the University through Enrolment Services. Registration will be limited to postdocs who fulfil the definition above, and who meet the eligibility criteria as stipulated on the [Graduate and Postdoctoral Studies website](#).
- ii. Upon registration, postdocs will be eligible for a University identity card issued by Enrolment Services.
- iii. Leaves of absence must comply with the Graduate and Postdoctoral Studies Policies for Vacation, Parental/Familial, and Health Leave (see [section 8.3: Vacation Policy for Graduate Students and Postdocs](#) and [University Regulations & Resources](#) > Graduate > Regulations > Categories of Students > : *Leave of Absence Status*).

3. Appointment, Funding, Letter of Agreement

- i. Postdoctoral appointments may not exceed the registration eligibility period as defined above.
- ii. In order to be registered, the postdoc must be assured of financial support other than from personal means during their stay at McGill University. This amount must be equivalent to the minimal stipend requirement set by the University in accordance with guidelines issued by federal and provincial research granting agencies or the collective agreement, as applicable. Funding during parental leave is subject to the conditions of the funding agency or the collective agreement, as applicable.
- iii. Postdocs require a [Letter of Agreement for Postdoctoral Education](#) signed by the postdoc, the supervisor, and the department/unit head or delegate.
- iv. Postdocs with full responsibility for teaching a course should be compensated over and above their postdoctoral funding as course lecturers. This applies to all postdocs, except those for whom teaching is part of the award.
- v. The amount of research, teaching, or other tasks that postdocs engage in over and above postdoctoral activities should conform to the regulations for postdocs specified by the Canadian research council of their discipline or the collective agreement. This applies to all postdocs, including those whose funding does not come from the Canadian research councils.

4. Privileges

- i. Postdocs have the same pertinent rights as the ones granted to McGill students under mcgill.ca/students/srr, and those granted by the policies listed at mcgill.ca/secretariat/policies-and-regulations.
- ii. Postdocs have full graduate student borrowing privileges in McGill libraries through their identity card.
- iii. As a general rule, postdocs may take courses for credit as Special Students following the admissions procedures outlined at mcgill.ca/gradapplicants/apply/prepare/visiting. *Tuition and other charges* will apply.
- iv. Postdocs may be listed in the McGill directory.
- v. Access to sports facilities may be purchased on a monthly basis through McGill Athletics and Recreation.
- vi. Postdoctoral Fellows and Scholars are mandatory members of the Post-Graduate Students' Society (PGSS) and an annual association fee is automatically charged.
- vii. Postdocs are permitted membership in the Faculty Club; an annual fee will be charged for this membership.
- viii. Postdocs are encouraged to participate in Professional Development Workshops provided by Graduate and Postdoctoral Studies, and Teaching and Learning services. These sessions are usually free of charge.
- ix. Postdocs have access to the services provided by the Ombudsperson.
- x. Postdocs may enrol as part-time students in the second language written and spoken English/French courses offered by the School of Continuing Studies/French Language Centre. Postdocs will be charged tuition for these courses. International Postdocs may be required to obtain a CAQ and a Study Permit.
- xi. Access to student services is granted to non-unionized postdocs, who are charged the Student Services fee in the Fall and Winter terms, through their student fee accounts.

5. Responsibilities

- i. Postdocs are subject to the responsibilities outlined at mcgill.ca/students/srr and must abide by the policies listed at mcgill.ca/secretariat/policies-and-regulations.
- ii. Each academic unit hosting postdocs should clearly identify postdocs' needs and the means by which they will be met by the unit.
- iii. Each academic unit should assess the availability of research supervision facilities, office space, and research funding before recruiting postdocs.
- iv. Some examples of the responsibilities of the academic unit are:
 - to verify the postdoc's eligibility period for registration;
 - to provide postdocs with departmental policy and procedures that pertain to them;
 - to facilitate the registration and appointment of postdocs;
 - to assign departmental personnel the responsibility for postdoctoral affairs in the unit;
 - to oversee and sign off on the Letter of Agreement for Postdoctoral Education;
 - to ensure that each postdoc has a supervisor, lab and/or office space, access to research operating costs and necessary equipment;
 - to include postdocs in departmental career and placement opportunities;
 - to refer postdocs to the appropriate University policies and personnel for the resolution of conflict that may arise between a postdoc and a supervisor.
- v. Some examples of the responsibilities of the supervisor are:
 - to uphold and transmit to their postdocs the highest professional standards of research and/or scholarship;
 - to provide research guidance;
 - to meet regularly with their postdocs;
 - to provide feedback on research submitted by the postdocs;
 - to clarify expectations regarding intellectual property rights in accordance with the University's policy;
 - to provide mentorship for career development;
 - to prepare, sign, and adhere to a Letter of Agreement for Postdoctoral Education.
- vi. Some examples of the responsibilities of postdocs are:
 - to inform themselves of and adhere to the University's policies and/or regulations for postdocs as outlined at mcgill.ca/gps/postdocs, mcgill.ca/students/srr and the Graduate and Postdoctoral Studies [University Regulations and Resources](#);
 - to submit a complete file for registration to Enrolment Services;
 - to sign and adhere to their Letter of Agreement for Postdoctoral Education;
 - to communicate regularly with their supervisor;
 - to inform their supervisor of their absences.
- vii. Some examples of the responsibilities of the University are:
 - to register postdocs;
 - to provide an appeal mechanism in cases of conflict;
 - to provide documented policies and procedures to postdocs;
 - to provide postdocs with the necessary information on McGill University student services (Postdoctoral Fellows and Scholars) and HR policies and guidelines (Postdoctoral Researchers).

Approved by Senate, April 2000; revised May 2014; February 2020.

8.3 Vacation Policy for Graduate Students and Postdocs

Graduate students and Postdocs should normally be entitled to vacation leave equivalent to university holidays and an additional total of fifteen (15) working days in the year. Funded students and Postdocs with fellowships and research grant stipends taking additional vacation leave may have their funding reduced accordingly.

Council of FGSR April 23, 1999

8.4 Leave of Absence for Health and Parental/Familial Reasons

A leave of absence may be granted for maternity or parental reasons or for health reasons (see [University Regulations & Resources > Graduate > : Leave of Absence Status](#)).

Such a leave must be requested on a term-by-term basis and may be granted for a period of up to 52 weeks. For a maternity or parental leave, the eligibility period of a maximum of 52 consecutive weeks is determined based on when the child is born; if the leave is interrupted for one or two terms, the eligibility period cannot be extended. Students and Postdocs must make a request for such a leave in writing to their department and submit a medical certificate. The department shall forward the request to Enrolment Services. See the procedure in [University Regulations & Resources > Graduate > : Leave of Absence Status](#).

Students who have been granted such a leave will have to register for the term(s) in question and their registration will show as “leave of absence” on their record. No tuition fees will be charged for the duration of the authorized leave. Research supervisors are not obligated to remunerate students and Postdocs on leave. A summary table of various leave policies (paid or unpaid) for students and Postdocs paid from the Federal and Quebec Councils through fellowships or research grants is available at mcgill.ca/gps/funding/getting-paid under "Leave Policies and Form."

8.5 Postdoctoral Research Trainees

Eligibility

If your situation does not conform to the Government of Quebec's definition of a Postdoctoral Fellow, you may be eligible to attend McGill as a Postdoctoral Research Trainee. While at McGill, you can perform research only (you may not register for courses or engage in clinical practice). Medical specialists who will have clinical exposure and require a training card must register through Postgraduate Medical Education of the Faculty of Medicine and Health Sciences—not Graduate and Postdoctoral Studies.

The category of Postdoctoral Research Trainee is for:

Category 1: An individual who has completed requirements for the Doctoral degree or medical specialty, but whose degree/certification has not yet been awarded. An individual in this category will subsequently be eligible for registration as a Postdoctoral Fellow.

Category 2: An individual who is not eligible for Postdoctoral Registration according to the Government of Quebec's definition, but is a recipient of an external postdoctoral award from a recognized Canadian funding agency.

Category 3: An individual who holds a professional degree (or equivalent) in a regulated health profession (as defined under CIHR-eligible health profession) and is enrolled in a program of postgraduate medical education at another institution. This individual wishes to conduct the research stage or elective component of their program of study at McGill University under the supervision of a McGill professor. This individual will be engaged in full-time research with well-defined objectives, responsibilities, and methods of reporting. Applications must be accompanied by a letter of permission from the applicant's home institution (signed by the Department Chair, Dean, or equivalent) confirming registration in their program and stating the expected duration of the research stage. Individuals who are expecting to spend more than one year are encouraged to obtain formal training (master's or Ph.D.) through application to a relevant graduate program.

Category 4: An individual with a regulated health professional degree (as defined under CIHR-eligible health profession), but not a Ph.D. or equivalent or medical specialty training, but who fulfils criteria for funding on a tri-council operating grant or by a CIHR fellowship (up to maximum of five years post-degree).



Note: Individuals who are not Canadian citizens or permanent residents must inquire about eligibility for a work permit.

General Conditions

- The maximum duration is three years
- The individual must be engaged in full-time research
- The individual must provide copies of official transcripts/diplomas
- The individual must have the approval of a McGill professor to supervise the research and of the Unit
- The individual must have adequate proficiency in English, but is not required to provide official proof of English competency to Enrolment Services
- The individual must comply with regulations and procedures governing research ethics and safety and obtain the necessary training
- The individual will be provided access to McGill libraries, email, and required training in research ethics and safety. Any other University services must be purchased (e.g., access to athletic facilities)
- The individual must arrange for basic health insurance coverage prior to arrival at McGill and may be required to provide proof of coverage

9 Graduate Studies Guidelines and Policies

Refer to [University Regulations & Resources](#) > [Graduate](#) > [: Guidelines and Policies](#) for information on the following:

- Guidelines and Regulations for Academic Units on Graduate Student Advising and Supervision
- Policy on Graduate Student Research Progress Tracking
- Ph.D. Comprehensives Policy
- Graduate Studies Reread Policy
- Failure Policy
- Guideline on Hours of Work

10 Graduate Student Services and Information

Graduate students are encouraged to refer to : [Student Services and Information](#) for information on the following topics:

- Service Point
- Student Rights & Responsibilities
- Student Services – Downtown & Macdonald Campuses
- Residential Facilities
- Athletics and Recreation
- Ombudsperson for Students
- Extra-Curricular and Co-Curricular Activities
- Bookstore
- Computer Store
- Day Care

11 Information on Research Policies and Guidelines, Patents, Postdocs, Associates, Trainees

Refer to [University Regulations & Resources](#) > Graduate > : [Research Policy and Guidelines](#) for information on the following:

- Regulations on Research Policy
- Regulations Concerning the Investigation of Research Misconduct
- Requirements for Research Involving Human Participants
- Policy on the Study and Care of Animals
- Policy on Intellectual Property
- Regulations Governing Conflicts of Interest
- Safety in Field Work
- Office of Sponsored Research
- Postdocs
- Research Associates

12 Browse Academic Units & Programs

The programs and courses in the following sections have been approved for the 2021–2022 session as listed. The Faculty/School reserves the right to introduce changes as may be deemed necessary or desirable at any time throughout the year.

12.1 Architecture

12.1.1 Location

Peter Guo-hua Fu School of Architecture
Macdonald-Harrington Building
815 Sherbrooke Street West
Montreal QC H3A 0C2
Canada
Telephone: 514-398-6700
Website: mcgill.ca/architecture

12.1.2 About Peter Guo-hua Fu School of Architecture

M.Arch. (Professional) (Non-Thesis), M.Arch. (Post-professional) (Non-Thesis), Ph.D.

The Peter Guo-hua Fu School of Architecture at McGill University has a professional Master of Architecture program, a post-professional Master of Architecture program, and a Ph.D. program.

The **M.Arch. (Professional)** requires the equivalency of the B.Sc. (Architecture) degree for admittance.

- Master of Architecture (M.Arch.) Professional (Non-Thesis)(60 credits)

The M.Arch. (Professional) program is accredited by the Canadian Architectural Certification Board (CACB) and is recognised as accredited by the [National Council of Architectural Registration Boards](#) (NCARB) in the U.S.

The **M.Arch. (Post-professional)** and the **Ph.D. programs** are for study beyond the professional degree in architecture. These programs have been conceived to respond to the needs of graduates with some professional experience who wish to acquire more specialized knowledge in architecture. The M.Arch. (Post-professional) program reflects a McGill tradition of academic inquiry and research, and provides an opportunity for a select number of students and staff to work together. The program is organized in such a way as to meet the needs of the professional practitioner and the researcher, and is intended to extend traditional architectural education as well as address new issues.

There are two areas of study in the M.Arch. (Post-professional) program:

- Architectural History and Theory
- Urban Design and Housing

Information concerning the Ph.D. program, the duration of all programs offered, documents required of applicants, etc., may be obtained at mcgill.ca/architecture.

Architectural Certification in Canada

In Canada, all provincial associations recommend a degree from an accredited professional degree program as a prerequisite for licensure. The [CACB](#), which is the sole agency authorized to accredit Canadian professional degree programs in architecture, recognizes two types of accredited degrees: the Bachelor of Architecture and the Master of Architecture. A program may be granted a six-year, three-year, or two-year term of accreditation, depending on its degree of conformance with established educational standards.

Master's degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree, which, when earned sequentially, comprise an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

Since all provincial associations in Canada recommend any applicant for licensure to have graduated from a CACB-accredited program, obtaining such a degree is an essential aspect of preparing for the professional practice of architecture. While graduation from a CACB-accredited program does not assure registration, the accrediting process is intended to verify that each accredited program substantially meets those standards that, as a whole, comprise an appropriate education for an architect.

Please note that the M.Arch. (Post-professional) degree is not a professional degree and does not satisfy the requirements for certification with the CACB.

section 12.1.5: Master of Architecture (M.Arch.) Professional (Non-Thesis) (60 credits)

The M.Arch. (Professional); Non-Thesis degree program provides a structured opportunity to explore advanced architectural design, integrating building construction, landscape and urban design, professional practice, sustainable design, and the history and theory of architecture. A strategic focus on design methodology, innovative research, and self-directed inquiry, supported by the advanced media and modeling technologies and other resources required to carry out architectural research and creative practice.

Post-Professional Programs

The Post-professional master's programs are open to applicants who have a professional degree in architecture. Students holding the McGill B.Arch. (former) or M.Arch. (Professional) (current) degree, or an equivalent professional qualification, with a CGPA of at least 3.0 on a 4.0-point scale, are eligible for admission to the post-professional programs. In special cases, applicants with a degree in a related field may be considered.

The primary requirement for the M.Arch. (Post-professional) degree is coursework to be completed in the first two terms, and a research report (depending on the particular area of study requirements) that is completed during the summer. The residence requirement for the M.Arch. (Post-professional) degree is three academic terms (September to December; January to April; May to August), making it possible for students to obtain their degree after 12 calendar months in the program.

section 12.1.6: Master of Architecture (M.Arch.) Post-professional (Non-Thesis): Architectural History & Theory (45 credits)

Teaching and research in the History and Theory of Architecture program concentrates on the exploration and understanding of the complex connections between history, theory, design, and interdisciplinary concerns, particularly in the areas of philosophy and epistemology. This option is concerned with the reconciliation of ethics and poetics in architectural practice.

The master's curriculum, which in most cases is also a required foundation year for a Ph.D. in the field, is simple in terms of course requirements, but demanding in terms of personal commitment to reading and writing. It is particularly suited to students with a professional background in architecture who want to explore and understand the complex connections between history, theory, and design. A thorough understanding of architecture as a cultural phenomenon, leading to a more serious definition of its true essence as it appears in history, is now regarded as crucial by practitioners and teachers who wish to come to terms with the present predicaments of architecture vis-à-vis the contradictions of the contemporary world.

section 12.1.7: Master of Architecture (M.Arch.) Post-professional (Non-Thesis) Urban Design and Housing (45 credits)

The UDH program enables students who have already completed a professional degree in Architecture to develop specialized skills for contemporary practice in housing, urban design, and the management of human settlements. The 12-month program comprises three consecutive terms of coursework. Intensive seminars held during the first two terms focus on contemporary theory and research methods in urban design and housing. Students take ARCH 603 (Urban Design and Housing Studio) as an applied synthesis of the material discussed in the two core seminars. Complementary coursework rounds out the fall and winter terms along with ARCH 623 (Project Preparation), in which students develop the strategy for a major independent project (ARCH 632, Urban Design and Housing Research Report) to be completed in the summer term.

section 12.1.8: Doctor of Philosophy (Ph.D.) Architecture

The McGill University Ph.D. in Architecture is a research degree with a thesis. The foundations for the doctoral thesis are developed through a series of courses taken in the first two years of study. Students and supervisors meet regularly in the first year to prepare the thesis proposal (ARCH 700). Three Literature Review preparatory courses (ARCH 721, ARCH 722, ARCH 723) and three (or more) complementary courses are taken. All students also participate in the two Research Seminars (ARCH 711, ARCH 712) to present the research framework and objectives for peer critique. By the end of the second year of studies (Ph.D. 3), Ph.D. students must complete the Comprehensive Examination (ARCH 701) with a formal presentation to their advisory committee.

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

12.1.3 Architecture Admission Requirements and Application Procedures

12.1.3.1 Admission Requirements

M.Arch. (Professional) Program (Non-Thesis)

Applicants holding the McGill B.Sc.(Arch.) degree, or equivalent, with a cumulative grade point average (CGPA) of at least 3.0 on a scale of 4.0, are eligible to apply for admission.

M.Arch. (Post-professional) (Non-Thesis)

Applicants holding an accredited professional degree in architecture, or equivalent, with a cumulative grade point average (CGPA) of at least 3.0 on a scale of 4.0, are eligible to apply for admission. In special cases, candidates with a degree in a related field may be considered.

Ph.D.

Candidates with high standing in McGill's M.Arch. (Post-professional), or who hold an equivalent degree from another university, are eligible to apply to this program. Those who have an adequate background at the master's level in the proposed area of research will be admitted to Ph.D. 2 with the stipulation of additional courses, if necessary.

A working knowledge of a language or languages relevant to the area of research is required.

12.1.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at mcgill.ca/gradapplicants/apply.

See [University Regulations & Resources > Graduate > Graduate Admissions and Application Procedures > : Application Procedures](#) for detailed application procedures.

12.1.3.2.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

Professional Master of Architecture:

- Summary of work experience. A minimum of 16 weeks of work experience is required. Further information and guidelines are provided at mcgill.ca/architecture/programs/professional/workexperience. Please use the following: [Work Experience Form](#) [.pdf]*



Note: Your employer's signature is required along with the company business card. We do **not** require the Director's signature.

- Curriculum Vitae
- Applicants are required to upload unofficial transcripts from all universities previously attended (including summer term, exchange term, or study-away term). If you are recommended for admission, you will later be required to supply official transcripts. Transcripts in languages other than English or French must be accompanied by an English or French translation provided by the institution issuing the transcript or by a certified translator. Please refer to mcgill.ca/gradapplicants/apply/ready/submit/upload and mcgill.ca/gradapplicants/apply/prepare/checklist/documents.

- A total of two (2) confidential letters of reference are required for your application: two (2) from academics **or** one (1) from an academic and one (1) from a recent employer. Once you have identified your referees (you must provide a valid institutional email address for each referee), McGill will send them an email asking for a reference in support of your application. Additionally, uploaded letters must be on university or company/business stationery and the referee must indicate their position and full contact information at the institution. Please refer to mcgill.ca/gradapplicants/apply/prepare/checklist/documents.
- Once accepted to the M.Arch. Professional program, students will benefit from faculty expertise within the School in the areas of History and Theory of Architecture; Cultural Landscape Studies; Affordable and Sustainable Housing; Computation and Fabrication; High-performance Visualization; Minimum Cost Housing; Gender, Sexuality, and Space; Design and Health; Urban Design; Landscape Urbanism; Architectural Representation; Urban Agriculture; Vernacular Architecture; Reurbanization.
- Completed *Program Comparison Chart**



Note: Not required by B.Sc.(Arch.) graduates from McGill University.

- Course calendar descriptions of previous college and/or university studies must be submitted in addition to the Program Comparison Chart.



Note: Not required by B.Sc.(Arch.) graduates from McGill University.

- A comprehensive e-portfolio (pdf format, max. 15 MB, due no later than December 15) that may include the following: selected work from all previous design studios; examples of project work from other courses; examples of freehand drawing and sketching; examples of professional work: sketches, drawings, images of models, photographs of built work (professional work includes work carried out while employed in architects' offices, as well as personal projects; please identify the architect(s) and your own roles in each project illustrated).



Note: Please indicate, where applicable, if a project is an individual or group project.

Post-professional programs:

M.Arch. (Post-professional) and Ph.D.

Please Note: Admissions are currently closed for the M.Arch. (Post-professional) History and Theory option and the M.Arch. (Post-professional) Urban Design and Housing.

- Curriculum Vitae
- Applicants are required to upload unofficial transcripts from all universities previously attended. If you are recommended for admission you will later be required to supply official transcripts. Transcripts in languages other than English or French must be accompanied by an English or French translation provided by the institution issuing the transcript or by a certified translator. Please refer to mcgill.ca/gradapplicants/apply/ready/submit/upload and mcgill.ca/gradapplicants/apply/prepare/checklist/documents.
- Two confidential letters of reference are required for your application. Once you have identified your referees (you must provide a valid institutional email address for each referee), McGill will send them an email asking for a reference in support of your application. Additionally, uploaded letters must be on university or company/business stationery and the referee must indicate their position and full contact information at the institution. Please refer to mcgill.ca/gradapplicants/apply/prepare/checklist/documents.
- Research proposal: a four-page research proposal, as well as a detailed explanation of why and with whom they wish to study at McGill University's Peter Guo-hua Fu School of Architecture.
- A digital portfolio (PDF format) of not more than 15 MB must be submitted containing at least five examples of the applicant's work. Doctoral applicants should submit evidence of research accomplishments, which could, in some cases, replace the portfolio requirement.
- Written work: a sample of the applicant's written work, drawn from essays, papers, or other work previously submitted for academic evaluation or publication, and falling within the desired field of graduate study.
- Proof of English language proficiency: Applicants to graduate studies whose mother tongue is not English and who have not completed an undergraduate or graduate degree from a recognized foreign institution where English is the language of instruction or from a recognized Canadian institution (anglophone or francophone), must submit documented proof of competency in oral and written English. Before acceptance, appropriate exam results must be submitted directly from the *TOEFL* (Test of English as a Foreign Language) or *IELTS* (International English Language Testing Systems) Office. An institutional version of the TOEFL is not acceptable. Applications will not be considered if a TOEFL or IELTS test result is not available. For the TOEFL, a minimum overall score of 86 is required on the Internet-based test (iBT), with each component score (i.e., reading, writing, speaking, listening) not less than 20. (The TOEFL Institution Code for McGill University is 0935.) For the IELTS, a minimum overall band score of 6.5 is required. For further information, please refer to mcgill.ca/gradapplicants/international/proficiency.

* More information is available on the [Peter Guo-hua Fu School of Architecture website](http://mcgill.ca/gradapplicants/international/proficiency).

12.1.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Peter Guo-hua Fu School of Architecture and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at mcgill.ca/gps/contact/graduate-program.

	Application Opening Dates		Application Deadlines		
	All Applicants	Non-Canadian citizens	Canadian citizens/Perm. residents of Canada	Current McGill Students (any citizenship)	Special, Visiting & Exchange
Fall Term:	Sept. 15	<ul style="list-style-type: none"> Dec. 15 (M.Arch. Professional) Jan. 15 (Ph.D.) 	<ul style="list-style-type: none"> Dec. 15 (M.Arch. Professional) Jan. 15 (Ph.D.) 	<ul style="list-style-type: none"> Dec. 15 (M.Arch. Professional) Jan. 15 (Ph.D.) 	May 1 (M.Arch.(Professional) only)
Winter Term:	Feb. 15	N/A	N/A	N/A	Sept. 1 (M.Arch.(Professional) only)
Summer Term:	N/A	N/A	N/A	N/A	N/A

Admission to graduate studies is competitive; accordingly, late and/or incomplete applications are considered only as time and space permit.



Note: Applications for Summer term admission will not be considered.

12.1.4 Architecture Faculty

Director

David Theodore

Undergraduate Program Director

David Covo

Graduate Program Director

Ipek Tureli

Emeritus Professors

Bruce Anderson; B.Arch.(McG.), M.Arch.(Harv.), F.R.A.I.C., O.A.Q.

Vikram Bhatt; N.Dip.Arch.(Ahmed.), M.Arch.(McG.), M.R.A.I.C.

Derek Drummond; B.Arch.(McG.), F.R.A.I.C., O.A.Q., O.A.A. (*William C. Macdonald Emeritus Professor of Architecture*)

Alberto Pérez-Gómez; Dipl.Eng.Arch.(IPN), M.A., Ph.D.(Essex), M.R.A.I.C. (*Saidye Rosner Bronfman Professor of Architectural History*)

Adrian Sheppard; B.Arch.(McG.), M.Arch.(Yale), A.A.P.P.Q., F.R.A.I.C., O.A.Q.

Radoslav Zuk; B.Arch.(McG.), M.Arch.(MIT), D.Sc.(UAA), F.R.A.I.C., O.A.Q., O.A.A.

Associate Professors (Post-Retirement)

Ricardo L. Castro; B.Arch.(Los Andes, Col.), M.Arch., M.A.(Ore.), F.R.A.I.C., R.C.A.

Robert Mellin; B.Arch., M.Sc.(Arch.)(U Penn), M.Arch.(McG.), Ph.D.(U Penn), N.L.A.A., F.R.A.I.C., R.C.A.

Pieter Sijpkens; B.Sc.(Arch), B.Arch.(McG.)

Professors

Annamarie Adams; B.A.(McG.), M.Arch., Ph.D.(Calif., Berk.), M.R.A.I.C. (*Stevenson Chair in the History and Philosophy of Science*)

Martin Bressani; B.Sc.(Arch.), B.Arch.(McG.), M.Sc.(Arch.)(MIT), D.E.A., Docteur(Paris IV), O.A.Q. (*William C. Macdonald Professor of Architecture*)

Avi Friedman; B.Arch.(Technion), M.Arch.(McG.), Ph.D.(Montr.), O.A.Q., I.A.A.

Kiel Moe; B.Arch.(Cinc.), M.Arch.(Virg.), M.Des.(Harv.) (*Gerald Sheff Chair in Architecture*)

Associate Professors

David Covo; B.Sc.(Arch.), B.Arch.(McG.), F.R.A.I.C., O.A.Q.

Rosetta S. Elkin; B.F.A.(Concordia), M.L.A.(Toronto), Ph.D.(Antwerp) F.A.A.R.

Associate Professors

Michael Jemtrud; B.A., B.Sc., B.Arch.(Penn. St.), M.Arch.(McG.), M.R.A.I.C.

Nik Luka; B.A.A.(Ryerson), M.Arch.(Laval), Ph.D.(Tor.), M.C.I.P.

David Theodore; B.A., B.Sc.(Arch.), B.Arch., M.Arch.(McG.), Ph.D.(Harv.) (*Canadian Research Chair in Architecture, Health, and Computation*)

Ipek Türeli; B.Arch.(ITU, Turkey), A.A.Dipl.(A.A.), Ph.D.(Calif., Berk.) (*Canada Research Chair in Architecture and Spatial Justice*)

Assistant Professors

Salmaan Craig; B.Sc., Eng.D.(Brunel)

Naomi Keena; B.Sc.(Arch.), B.Arch.(UCD), M.Sc.Arch.(Pratt), M.Arch.II (RPI), Ph.D.(RPI)

Philip Tidwell, B.A.(Wash.St-Louis), M.Arch.(Princeton).

Theodora Vardouli; Dipl.Arch.Eng., M.Sc.(Athens), Ph.D., S.M.Arch.S.(MIT)

Professors of Practice

Howard Davies

Peter Guo-hua Fu

Julia Gersovitz

Andrew King

Adjunct Professors

Conor Sampson

Course Lecturers

Vedanta Balbahadur, Evelyne Bouchard, Morgan Carter, Diana Cheng, Mariel Collard, Cameron Cummings, Aniel Guxholli, Nancy Dunton, Tom Egli, Fabrizio Gallanti, Marc Hallé, Olga Karpova, Daniela Leon, Sybil McKenna, Hubert Pelletier, Marc-André Plourde, Lia Ruccolo, François Sabourin, Angela Silver, Tyler Swingle, Dustin Valen.

12.1.5 Master of Architecture (M.Arch.) Professional (Non-Thesis) (60 credits)

The M.Arch. (Professional); Non-Thesis degree program provides a structured opportunity to explore advanced architectural design, integrating building construction, landscape and urban design, professional practice, sustainable design, and the history and theory of architecture. A strategic focus on design methodology, innovative research, and self-directed inquiry, supported by the advanced media and modeling technologies and other resources required to carry out architectural research and creative practice.

Graduate Program Director: Ipek Tureli

Required Courses (48 credits)

ARCH 670	(3)	Advanced Landscape Theory
ARCH 672	(9)	Architectural Design Studio 1
ARCH 673	(9)	Architectural Design Studio 2
ARCH 674	(3)	Professional Practice 1
ARCH 675	(3)	Architecture in Global Perspective
ARCH 676	(9)	Advanced Architectural Design
ARCH 678	(3)	Advanced Construction
ARCH 683	(9)	Directed Research Project

Complementary Courses (12 credits)

12 credits chosen from among the following:

ARCH 514	(4)	Community Design Workshop
ARCH 515	(3)	Sustainable Design

ARCH 517	(3)	Sustainable Residential Development
ARCH 525	(3)	Seminar on Analysis and Theory
ARCH 528	(3)	History of Housing
ARCH 531	(3)	Architectural Intentions Vitruvius - Renaissance
ARCH 532	(3)	Origins of Modern Architecture
ARCH 535	(3)	History of Architecture in Canada
ARCH 536	(3)	Heritage Conservation
ARCH 540	(3)	Selected Topics in Architecture 1
ARCH 541	(3)	Selected Topics in Architecture 2
ARCH 542	(3)	Selected Topics in Architecture 3
ARCH 543	(3)	Selected Topics in Architecture 4
ARCH 602	(3)	Housing Seminar
ARCH 604	(3)	Urban Design Seminar
ARCH 627	(3)	Research Methods
ARCH 641	(3)	Energy and Environments 1
ARCH 642	(3)	Energy and Environments 2
ARCH 680	(2)	Field Sketching
ARCH 684	(4)	Contemporary Theory 1
ARCH 685	(4)	Contemporary Theory 2
ARCH 688	(3)	Directed Research 1
ARCH 689	(3)	Directed Research 2
OCC1 625	(3)	Functional Environments
URBP 555	(3)	Real Estate and Planning
URBP 651	(3)	Redesigning Suburban Space

12.1.6 Master of Architecture (M.Arch.) Post-professional (Non-Thesis): Architectural History & Theory (45 credits)

The history and theory program pursues intellectual inquiries in the history of architecture, focusing upon the discipline's continually changing theoretical framework. It aims to advance knowledge and foster ethical reflections in architecture through critical historical research into the philosophical, political, cultural, and technological contexts of the discipline. The one-year, three semester program is suited to recent graduates of professional architecture programs and experienced practitioners who wish to explore the complex connections among history, theory, and design; it also provides a thorough preparation for the subsequent pursuit of a PhD degree in the history and theory of architecture. It is structured around core seminars and lectures on topics that range from the history of architecture, the history of science and technology in design, the influence of cultural and gender studies on the discipline, and aesthetic philosophy. The curriculum culminates with an individual research project defined by the student in consultations with advisers.

The History and Theory option within the M.Arch. post-professional program enables students who have completed their professional M.Arch. degree (or some closely-related degree) to develop critical skills and knowledge vis-a-vis architecture as a broad cultural phenomenon. The twelve-month program comprises three consecutive semesters of coursework. Required seminars held during the first two terms involve intensive commitment to reading and writing. The Fall and Winter terms are rounded out with one elective course and Project Preparation (ARCH 623), in which students develop the strategy for their major independent research or design undertaking, the History and Theory Project (ARCH 624), which is completed in the Summer term.

Research Project (15 credits)

ARCH 624	(15)	History and Theory Project
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Required Courses (27 credits)

ARCH 622	(4)	Research Methods for Architecture
ARCH 623	(3)	Project Preparation

ARCH 651	(6)	Architectural History and Theory Seminar 1
ARCH 652	(4)	Architectural History and Theory Seminar 2
ARCH 653	(4)	Architectural History and Theory Seminar 3
ARCH 654	(6)	Architectural History and Theory Seminar 4

Elective Course (3 credits)

Any course at the 500- or 600- level, with the approval of the School.

12.1.7 Master of Architecture (M.Arch.) Post-professional (Non-Thesis) Urban Design and Housing (45 credits)

The Urban Design and Housing program enables students who have already completed their professional M.Arch. degree (or equivalent) to develop specialized skills for contemporary practice in housing, urban design, and the management of human settlements. The twelve-month program comprises three consecutive semesters of coursework. Intensive seminars held during the first two terms focus on contemporary theory and research methods in urban design and housing. Students take ARCH 603 Urban Design and Housing Studio as an applied synthesis of the material discussed in the two core seminars. Nine credits of complementary coursework round out the Fall and Winter terms along with ARCH 623 Project Preparation, in which students develop the strategy for a major independent project (ARCH 632 Urban Design and Housing Research Report) to be completed in the Summer term.

Research Report (15 credits)

ARCH 632	(15)	Urban Design and Housing Research Report
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Required Courses (18 credits)

ARCH 551	(3)	Urban Design and Planning
ARCH 602	(3)	Housing Seminar
ARCH 603	(6)	Urban Design and Housing Studio
ARCH 623	(3)	Project Preparation
ARCH 627	(3)	Research Methods

Complementary Courses (12 credits)

12 credits of any courses at the 500 level or higher, approved by an adviser.

12.1.8 Doctor of Philosophy (Ph.D.) Architecture

The Ph.D. in Architecture is a research degree with a thesis, the foundations for which are developed through a series of courses taken in the first two years of study. Each student meets regularly with the supervisor in the first year to prepare the thesis proposal (ARCH 700). Three Literature Review preparatory courses (ARCH 721, ARCH 722, ARCH 723) and three (or more) complementary courses are taken in the first two years of study. All students also participate in the two Research Seminars (ARCH 711, ARCH 712) to present the research framework and objectives for peer critique. By the end of the second year of studies (Ph.D.-3), the student must complete the Comprehensive Examination (ARCH 701) with a formal presentation to an Advisory Committee.

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses (15 credits)

ARCH 700	(0)	Thesis Proposal
ARCH 701	(0)	Comprehensive Examination
ARCH 711	(3)	Doctoral Proseminar 1
ARCH 712	(3)	Doctoral Proseminar 2
ARCH 721	(3)	Literature Review 1
ARCH 722	(3)	Literature Review 2

Complementary Courses (9 credits)

Students must take 9 credits of courses at the 600 or 700 level, selected with the approval of the School.

12.2 Bioengineering

12.2.1 Location

Department of Bioengineering
McConnell Engineering Building, Room 350
3480 University Street
Montreal QC H3A 0E9
Telephone: 514-398-7254
Email: info.bioeng@mcgill.ca
Website: mcgill.ca/bioengineering

12.2.2 About Bioengineering

The Department of Bioengineering, established in 2012, is the newest department to join McGill University's renowned Faculty of Engineering. McGill researchers from nearly all faculty units, including seven Canada Research Chairs and many colleagues in the Faculties of Medicine and Health Sciences, Science, and Agricultural and Environmental Sciences, are actively involved in various areas of bioengineering. Within our Department, faculty members conduct research in three major fields:

- Biological materials and mechanics
- Biomolecular and cellular engineering
- Biological Information and Computation

12.2.3 Graduate Studies

Graduate study in Bioengineering is available through the Biological and Biomedical Engineering (BBME) graduate programs, offered jointly by the Department of Bioengineering (Faculty of Engineering) and the Department of Biomedical Engineering (Faculty of Medicine and Health Sciences). Biological and Biomedical Engineering is a broad, interdisciplinary field that involves the application of engineering, the physical sciences, biological sciences, and computer science to medicine and the life sciences. McGill's BBME programs offer unsurpassed opportunities for multidisciplinary research with internationally-renowned scientists.

Please consult : [Biological and Biomedical Engineering](#) and the [Biological and Biomedical Engineering website](#) for further information on this program.

12.2.4 Bioengineering Faculty

Chair

Dan V. Nicolau

Professors

Dan V. Nicolau; B.Eng., M.Eng.(Bucharest Tech.), M.S.(ASE, Bucharest), Ph.D.(Bucharest Tech.)

Amine Kamen; Ph.D.(Mines ParisTech), Ph.D.(École Poly., Montr.)

Sebastian Wachsmann-Hogiu; B.S.(Bucharest), Ph.D.(HU Berlin)

Yu (Brandon) Xia; B.Sc.(Peking), Ph.D.(Stan.)

Associate Professors

Allen Ehrlicher; B.Sc., B.A.(Texas-Austin), M.Sc., Ph.D.(Leipzig)

Adam Hendricks; B.S., M.S.(Virginia Tech), Ph.D.(Mich.)

J. Matt Kinsella; B.Sc.(SXU, Chicago), M.S., Ph.D.(Purd.)

Associate Professors

Georgios Mitsis; Dipl.(Nat. Tech., Athens), M.S.(Elect. Eng.), M.S.(Biomed. Eng.), Ph.D.(USC)

Assistant Professors

Codruta Ignea; B.Sc.(USAMVBT), Ph.D.(Crete)

Sara Mahshid; B.Sc.(IUST, Tehran), M.Sc., Ph.D.(SUT, Tehran)

Natalie Reznikov; M.Sc.(Hebrew), Ph.D.(Weizmann)

Caroline Wagner; B.Eng.(McG.), M.Eng., Ph.D.(MIT)

12.3 Chemical Engineering**12.3.1 Location**

Department of Chemical Engineering
 M.H. Wong Building
 3610 University Street
 Montreal QC H3A 0C5
 Canada
 Telephone: 514-398-4494
 Fax: 514-398-6678
 Email: gradcoordinator.chemeng@mcgill.ca
 Website: mcgill.ca/chemeng

12.3.2 About Chemical Engineering

The Department offers programs leading to the **Master of Engineering** and the **Doctor of Philosophy** degrees.

The Department's offices and research laboratories are located in the M.H. Wong Building. Collectively, 18 members of the academic staff conduct research programs in almost all areas of modern chemical engineering, drawing upon theoretical, computational, and experimental methodologies. The Department's faculty have been well supported by government programs (e.g., *NSERC*, *FRQNT*, *CIHR*, *CFI*, and *CRC*) and industry through research partnerships and contracts. Our laboratories are equipped with state-of-the-art equipment, and we attract outstanding graduate students from all over the world. Our main current research areas are briefly described below.

Advanced materials and polymers – The Department has an internationally recognized research program in structural, functional, and biological materials, spanning synthesis, characterization, processing, and modelling activities, with strong links to academic, government, and industrial research centres. Areas include plasma processing (e.g., nanofluids, carbon nanotubes, advanced coatings) and polymeric or “soft” materials research (e.g., self-assembling or structured materials; complex fluids; liquid crystals; colloids and soft composites; and novel polymerization methods). Applications of the research are targeted toward the development of next-generation, high-density storage media, functional coatings, electronic devices, composite fluids and “smart” materials, to name but a few.

Biomedical engineering and biotechnology – The majority of professors in the Department are involved with biological engineering. This is a very broad research area that includes biotechnology and biomedical engineering. Biotechnology is an integrated approach of combining life sciences (e.g., biochemistry and cell biology) with process engineering, design, and scale-up principles. This is the use of biological systems or living organisms to do practical things and manufacture valuable products such as biohydrogen, drugs, therapeutics, polymers, and surfactants. Biomedical engineering combines the principles of engineering with medicine as well as life sciences and biology. Examples of this include:

- drug delivery methods;
- biomedical devices;
- cardiovascular and other biomechanics;
- biomaterials for applications such as artificial implants;
- products such as bacteriophages for alternative treatment techniques.

Energy – Energy usage has increased significantly since the steam engine launched the Industrial Revolution. This is due to our ever-growing human population, increased production of consumer goods, and rising use of energy-intensive devices such as automobiles, cell phones, computers, and climate comfort units. Instability in oil production and the inevitable depletion of fossil fuels is forcing scientists to find new resources and develop new technologies to keep pace with elevating energy demands. The Chemical Engineering Department at McGill University has an extensive research effort related to energy including:

- hydrogen production from microbial conversion of waste streams and electrolysis of water;

- hydrogen storage and molecular modelling of hydrogen storage;
- hydrogen fuel cells and solid oxide fuel cells;
- methane recovery, storage, and transportation using gas hydrates;
- oil and gas flow assurance;
- plasma technology to produce nanomaterials for energy conversion/storage devices.

Environmental engineering – Environmental engineering is the application of science and engineering principles to protect the environment and remediate contaminated sites. Chemical and environmental engineers develop and design processes to provide healthy air, water, and soil. They also develop green products and sustainable processes. Using their background in process engineering, environmental chemistry, earth sciences, and biology, engineers have to meet the current and future challenges in protecting, managing, and restoring the environment. Ongoing research in the area of environmental engineering in our department includes:

- the study of wastewater treatment processes;
- biodegradation of emerging pollutants;
- advanced oxidation processes;
- transport and fate of waterborne contaminants;
- production of alternative fuels;
- environmental nanotechnology for remediation of contaminated soils and waters;
- green chemistry for safer products and processes;
- development of biosensors for pollutant detection.

Plasma science and engineering – Plasma is often called the fourth state of matter, being the result of raising a gas to such an energy level that it contains conducting particles such as electrons and ions. While most of the universe is in a plasma state, plasmas on earth are relatively uncommon. Plasma science and engineering research examines the use of the plasma state to produce physical and chemical changes to matter (bulk and surfaces). Plasmas may be in non-equilibrium, a state in which the overall gas is at low temperature and only the electrons are very energetic, or in the equilibrium state, where the temperature of all constituents is essentially equal and may range from thousands to tens of thousands of degrees Kelvin (e.g., the sun's surface is in a plasma state, at a temperature of about 6,000K). Non-equilibrium plasmas are used in such applications as the deposition of coatings and functionalization of surfaces, the treatment of cells, and the treatment of harmful gases and liquids. Thermal plasmas are used in the synthesis of advanced materials such as nanoparticles, carbon nanotubes, and coatings, as well as in the treatment of toxic and persistent wastes and metallurgical processing. Both thermal and non-thermal plasmas are currently used and studied in the McGill *Plasma Processing Laboratory*, which forms one of the founding groups of the Plasma-Québec Centre.

section 12.3.5: Master of Science (M.Sc.) Chemical Engineering (Thesis) (45 credits)

The M.Eng. in Chemical Engineering (Thesis) is a research-oriented degree that allows the candidates to refine their skills by expanding their knowledge of chemical engineering through coursework and a research thesis under the supervision of a Faculty member (professor). The M.Eng. (Thesis) program offers advanced training in not only fundamentals but also research methods and is, therefore, the more suitable option for those whose primary interest is research. Graduates of this degree either pursue a Ph.D. or work in industry.

section 12.3.6: Master of Engineering (M.Eng.) Chemical Engineering (Non-Thesis) (45 credits)

The M.Eng. in Chemical Engineering (Non-Thesis) is a course-oriented degree, which includes a short project completed under the supervision of a Faculty member (professor). Through the program, graduate students can advance their knowledge in various chemical engineering disciplines through coursework and technical training.

section 12.3.7: Master of Engineering (M.Eng.) Chemical Engineering (Non-Thesis): Environmental Engineering (45 credits)

*****This program is currently not offered.*****

The M.Eng. in Chemical Engineering (Non-Thesis) – Environmental Engineering is a specialized version of the M.Eng. in Chemical Engineering (Non-Thesis). This inter-departmental graduate program leads to a master's degree in Environmental Engineering. The objective of the program is to train environmental professionals at an advanced level. The program is designed for individuals with an undergraduate degree in engineering. This Non-Thesis degree falls within the M.Eng. and M.Sc. programs which are offered in the Departments of Bioresource, Chemical, Civil, and Mining and Materials Engineering. The Environmental Engineering program emphasizes interdisciplinary fundamental knowledge, practical perspective and awareness of environmental issues. It is a course-oriented degree, which includes prescribed courses related to environmental engineering and a short project completed under the supervision of a Faculty member (professor). Graduate students can specialize in environmental engineering through this program offered in collaboration with the Bieler School of Environment.

section 12.3.8: Doctor of Philosophy (Ph.D.) Chemical Engineering

The Ph.D. is a research degree requiring few courses and an extensive thesis, conducted under the supervision of a Faculty member (professor), that makes a distinct contribution to knowledge. The Ph.D. program prepares candidates for a career in teaching, research, and/or development and graduates are expected to have acquired autonomy in conducting research. McGill also offers various workshops that provide general, transitional, and professional skills development opportunities, preparing candidates for various career options following the Ph.D.

12.3.3 Chemical Engineering Admission Requirements and Application Procedures

12.3.3.1 Admission Requirements

Admission to graduate studies requires a minimum CGPA of 3.0/4.0 (or equivalent) for the complete bachelor's program, or a minimum GPA of 3.2/4.0 (or equivalent) in the last two years of full-time studies in an undergraduate program. Applicants to graduate studies whose mother tongue is not English, and who have not completed an undergraduate or graduate degree from a recognized foreign institution where English is the language of instruction or from a recognized Canadian institution (anglophone or francophone), must achieve a minimum *TOEFL* score of 90 on the Internet-based test (iBT), with each component score not less than 20, prior to admission.

M.Eng. (Thesis), M.Eng. (Non-Thesis)

Admission requires a bachelor's degree (or equivalent) in engineering or science disciplines.

Ph.D.

Admission requires a master's degree (or equivalent) from a recognized university. Students in the Department's M.Eng. (Thesis) program may petition to transfer to the Ph.D. program after one year without submitting the master's thesis following a formal "fast-track" procedure. At their request, applicants (without a master's degree) with exceptionally high Academic Standing and outstanding research potential will be considered for direct admission to the Ph.D. program.

12.3.3.2 Application Procedure

McGill's online application form for graduate program candidates is available at mcgill.ca/gradapplicants/apply.

See [University Regulations & Resources](#) > Graduate > Graduate Admissions and Application Procedures > : [Application Procedures](#) for detailed application procedures.

12.3.3.2.1 Additional Requirements

- Reference Letter – Ph.D. applicants must submit a letter of recommendation from their master's research supervisor.

12.3.3.3 Application Dates Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Chemical Engineering and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at mcgill.ca/gps/contact/graduate-program.

	Application Opening Dates		Application Deadlines	
	All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)	Current McGill Students (any citizenship)
Fall Term:	Sept. 15	Jan. 15	Jan. 15	Jan. 15
Winter Term:	Feb. 15	Aug. 1	Oct. 15	Oct. 15
Summer Term:	May 15	Jan. 15	Jan. 15	Jan. 15

Admission to graduate studies is competitive; accordingly, late and/or incomplete applications are considered only as time and space permit.

Application Deadlines differ for International and Canadian (and Permanent Resident) students to allow time to obtain a visa.

12.3.4 Chemical Engineering Faculty

Chair

Viviane Yargeau

Emeritus Professors

David G. Cooper; B.Sc., Ph.D.(Tor.)

John M. Dealy; B.S.(Kansas), M.S.E., Ph.D.(Mich.), Eng.

Musa R. Kamal; B.S.(Ill.), M.S., Ph.D.(Carn. Mell), Eng.

Richard J. Munz; B.A.Sc.(Wat.), Ph.D.(McG.), Eng.

W.J. Murray Douglas; B.Sc.(Qu.), M.S.E., Ph.D.(Mich.)

Emeritus Professors

Juan H. Vera; Ing.Quim.(UTE, Chile), M.Sc.(Calif., Berk.), Dr.Ing.(USM, Chile)

Professor (Post-Retirement)

Jean-Luc Meunier; Dipl.Ing.(EPFL), M.Sc., Ph.D.(INRS, Queb.), ing

Professors

Sylvain Coulombe; B.Sc., M.Sc.A.(Sher.), Ph.D.(McG.), ing. (*Gerald Hatch Faculty Fellow*)

Richard L. Leask; B.A.Sc., M.A.Sc.(Wat.), Ph.D.(Tor.), P.Eng.

Milan Maric; B.Eng.Mgt.(McM.), Ph.D.(Minn.), P.Eng.

Sasha Omanovic; Dipl.Ing., Dr.Sc.(Zagreb), P.Eng.

Alejandro D. Rey; B.Ch.E.(CCNY), Ph.D.(Calif., Berk.), F.R.S.C. (*James McGill Professor*)

Phillip Servio; B.A.Sc., Ph.D.(Br. Col.)

Nathalie Tufenkji; B.Eng.(McG.), M.Sc., Ph.D.(Yale), ing. (*CRC-Tier I*)

Viviane Yargeau; B.Ch.E., M.Sc.A., Ph.D.(Sher.), ing.

Associate Professors

Dimitrios Berk; B.Sc.(Bosphorus), M.E.Sc.(UWO), Ph.D.(Calg.), P.Eng.

Corinne Hoesli; B.Sc., B.A.Sc.(Ott.), Ph.D.(Br. Col.), ing.

Jan Kopycinski; Dipl.Ing.(BTU Cottbus), Dr.Sc.(ETH Zurich), P.Eng.

P-Luc Girard-Lauriault; B.Sc.(Montr.), Ph.D.(École Poly., Montr.)

Reghan James Hill; B.E.(Auck.), Ph.D.(Cornell)

Anne-Marie Kietzig; Dipl.Ing.(TU Berlin), Ph.D.(Br. Col.), ing.

Assistant Professors

Noémie Dorval Courchesne; B.Sc., B.A.Sc.(Ott.), Ph.D.(MIT)

Samuel Huberman; B.A.Sc.(Wat.), Ph.D.(MIT)

Christopher Moraes; B.A.Sc., Ph.D.(Tor.), P.Eng.

Ali Seifitokaldani; B.Sc., M.Sc.(AUT, Iran), Ph.D.(Montr.)

12.3.5 Master of Science (M.Sc.) Chemical Engineering (Thesis) (45 credits)

Thesis Courses (31 credits)

CHEE 697	(6)	Thesis Proposal
CHEE 698	(12)	Thesis Research 1
CHEE 699	(13)	Thesis Research 2

Required Courses (4 credits)

CHEE 681	(1)	Laboratory Safety 1
CHEE 682	(1)	Laboratory Safety 2
CHEE 687	(2)	Research Skills and Ethics

Complementary Courses (10 credits)

4 credits from the following:

CHEE 611	(4)	Heat and Mass Transfer
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CHEE 621	(4)	Thermodynamics
CHEE 631	(4)	Foundations of Fluid Mechanics
CHEE 641	(4)	Chemical Reaction Engineering
CHEE 651	(4)	Advanced Biochemical Engineering
CHEE 662	(4)	Computational Methods
CHEE 672	(4)	Process Dynamics and Control

A minimum of 3 credits of Chemical Engineering courses at the 500, 600, or 700 level.

Any remaining complementary course credit requirements may be fulfilled by completing Chemical Engineering or other Engineering or Science courses at the 500, 600, or 700 level.

12.3.6 Master of Engineering (M.Eng.) Chemical Engineering (Non-Thesis) (45 credits)

Research Project

Project (design or research): 6-12 credits.

6 credits must include the following course:

CHEE 695	(6)	Project in Chemical Engineering
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Complementary Courses

33-39 credits (a minimum of 18 credits in Chemical Engineering) at the 500, 600, or 700 level.

9 credits must be in an area of concentration.

12 additional courses at the 500, 600, or 700 level.

12.3.7 Master of Engineering (M.Eng.) Chemical Engineering (Non-Thesis): Environmental Engineering (45 credits)

This program is currently not accepting applicants.

Research Project (6 credits)

CHEE 695	(6)	Project in Chemical Engineering
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Required Courses (6 credits)

CHEE 591	(3)	Environmental Bioremediation
CIVE 615	(3)	Environmental Engineering Seminar

Complementary Courses (22 credits)

Minimum of 22 credits

Data analysis course: (3 credits)

AEMA 611	(3)	Experimental Designs 1
CIVE 555	(3)	Environmental Data Analysis
PSYC 650	(3)	Advanced Statistics 1

Toxicology: (3 credits)

OCCH 612	(3)	Principles of Toxicology
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OCCH 616 (3) Occupational Hygiene

Water pollution engineering: (4 credits)

CIVE 651 (4) Theory: Water / Wastewater Treatment
CIVE 652 (4) Bioprocesses for Wastewater Resource Recovery
CIVE 660 (4) Chemical and Physical Treatment of Waters

Air pollution engineering: (3 credits)

CHEE 592 (3) Industrial Air Pollution Control
MECH 534 (3) Air Pollution Engineering

Soil and water quality management: (3 credits)

BREE 533 (3) Water Quality Management
CIVE 686 (4) Site Remediation

Environmental impact: (3 credits)

GEOG 551 (3) Environmental Decisions
GEOG 601 (3) Advanced Environmental Systems Modelling

or an approved 500-, 600-, or 700-level alternative.

Environmental policy: (3 credits)

URBP 506 (3) Environmental Policy and Planning

or an approved 500-, 600-, or 700-level alternative.

Elective Courses (11 credits)

CHEE 696 (6) Extended Project

or another Engineering or non-Engineering 500-, 600-, or 700-level course subject to approval.

12.3.8 Doctor of Philosophy (Ph.D.) Chemical Engineering

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses

CHEE 681 (1) Laboratory Safety 1
CHEE 682 (1) Laboratory Safety 2
CHEE 687 (2) Research Skills and Ethics
CHEE 795 (0) Ph.D. Thesis Proposal
CHEE 796 (0) Ph.D. Proposal Defence
CHEE 797 (0) Ph.D. Seminar

Complementary Courses

(6-12 credits)

6-8 credits of Chemical Engineering courses (two courses) at the 500, 600, or 700 level.

12 credits (three courses) from the following list must be taken during the M.Eng. and/or Ph.D. program:

CHEE 611	(4)	Heat and Mass Transfer
CHEE 621	(4)	Thermodynamics
CHEE 631	(4)	Foundations of Fluid Mechanics
CHEE 641	(4)	Chemical Reaction Engineering
CHEE 651	(4)	Advanced Biochemical Engineering
CHEE 662	(4)	Computational Methods
CHEE 672	(4)	Process Dynamics and Control

* Note: The number of credits taken will depend on how many of these courses have been taken during the M.Eng. program. Three courses from the above list must be taken during the M.Eng. and/or Ph.D. program. If not taken during the M.Eng. program, they must be taken during the Ph.D. program.

12.4 Civil Engineering**12.4.1 Location**

Department of Civil Engineering
 Macdonald Engineering Building, Room 492
 817 Sherbrooke Street West
 Montreal QC H3A 0C3
 Canada
 Telephone: 514-398-6858
 Email: gradinfo.civil@mcgill.ca
 Website: mcgill.ca/civil

12.4.2 About Civil Engineering

Advanced courses of instruction and laboratory facilities are available for Engineering graduate students who wish to proceed to the degrees of **M.Eng.**, **M.Sc.**, and **Ph.D.**

Graduate studies and research are at present being conducted in the fields of structures; infrastructure rehabilitation; risk engineering; fluid mechanics and hydraulics; materials engineering; soil behaviour; soil mechanics and foundations; water resources engineering; environmental engineering; and transportation engineering.

The master's degree can be pursued as a research degree (M.Sc.-Thesis) or as a coursework-based degree (M.Eng.-Non-Thesis). The thesis degree is for those who wish to undertake research while the non-thesis degree is for those who wish to have a broader and more specialized training in civil engineering.

section 12.4.5: Master of Science (M.Sc.) Civil Engineering (Thesis) (45 credits)

Students obtain a deeper understanding of their area of specialty through courses selected with their supervisor. A two- to three-semester independent research project is undertaken in the field of structures; infrastructure rehabilitation; risk engineering; fluid mechanics and hydraulics; materials engineering; soil behaviour; soil mechanics and foundations; water resources engineering; environmental engineering; and transportation engineering.

section 12.4.6: Master of Engineering (M.Eng.) Civil Engineering (Non-Thesis): Environmental Engineering (45 credits)

This program is offered to students with a university undergraduate degree in engineering who desire graduate education in the environmental engineering field. This option is within the context of the existing M.Eng. (non-thesis) programs currently offered in the Departments of Bioresource Engineering (Agricultural and Environmental Sciences); Chemical Engineering; Civil Engineering; and Mining and Materials Engineering. This program emphasizes interdisciplinary fundamental knowledge courses, practical applications in diverse environmental contexts, and functional skills needed for solving environmental problems through a wide range of technical and non-technical courses offered by collaborating departments and faculties at the University. Candidates must possess a bachelor's degree in engineering. The Environmental Engineering option is administered by the Faculty of Engineering.

Further information may be obtained from the Program Coordinator, Department of Civil Engineering.

section 12.4.7: Master of Engineering (M.Eng.) Civil Engineering (Non-Thesis) (45 credits)

This is primarily a coursework degree with the possibility of a small independent research project.

section 12.4.8: Doctor of Philosophy (Ph.D.) Civil Engineering

Research can be conducted in the fields of structures; infrastructure rehabilitation; risk engineering; fluid mechanics and hydraulics; materials engineering; soil behaviour; soil mechanics and foundations; water resources engineering; environmental engineering; and transportation engineering.

12.4.3 Civil Engineering Admission Requirements and Application Procedures

12.4.3.1 Admission Requirements

The general rules of Graduate and Postdoctoral Studies apply and are detailed in [University Regulations & Resources > Graduate > : Graduate Admissions and Application Procedures](#). The minimum academic standard for admission is a cumulative grade point average (CGPA) of 3.0/4.0 in a recognized program. Alternatively, an equivalent grade point average of no less than 3.2/4.0 over the last two years of the program will be accepted.

Applicants to graduate studies whose mother tongue is not English, and who have **not** completed an undergraduate or graduate degree from a recognized foreign institution where English is the language of instruction or from a recognized Canadian institution (anglophone or francophone), must write either:

- the [TOEFL](#) (Test of English as a Foreign Language; Applicants must achieve an overall minimum score of 94 on the internet-based test (iBT) with a minimum score of 20 for each component (i.e., Writing, Reading, Speaking, Listening); **or**
- the [IELTS](#) (International English Language Testing System); Applicants must achieve a minimum band score of 7 in order to apply.

Test results reach McGill approximately eight weeks after the test is taken; please note that it is the student's responsibility to make the necessary arrangements with the examining board to write the test in their country of residence. Full information and registration forms may be obtained by consulting the [TOEFL](#) or the [IELTS](#) websites.

Candidates must meet **both** of these requirements to be eligible to apply. Meeting minimum requirements does not guarantee admission.

The GRE is not required but is highly recommended.

12.4.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at mcgill.ca/gradapplicants/apply.

See [University Regulations & Resources > Graduate > Graduate Admissions and Application Procedures > : Application Procedures](#) for detailed application procedures.

12.4.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Civil Engineering and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at mcgill.ca/gps/contact/graduate-program.

Application Opening Dates		Application Deadlines		
	All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)	Current McGill Students (any citizenship)
Fall Term:	Sept. 15	Jan. 15	Jan. 15	Jan. 15
Winter Term:	Feb. 15	Aug. 1	Oct. 15	Oct. 15
Summer Term:	N/A	N/A	N/A	N/A

Admission to graduate studies is competitive; accordingly, late and/or incomplete applications are considered only as time and space permit.



Note: Applications for Summer term admission will not be considered.

12.4.4 Civil Engineering Faculty

Chair

Mohamed A. Meguid

Associate Chair

Jinxia Liu (Student Affairs)

Colin Rogers (Academic Programs)

Emeritus Professors

M. Saeed Mirza; M.S., B.Eng.(Karachi), M.Eng., Ph.D.(McG.), F.E.I.C., F.C.S.C.E., F.A.C.I., Hon. F.I.E.P., Eng.

Suresh C Shrivastava; B.Sc.(Eng.)(Vikram), M.C.E.(Delaware), Sc.D.(Col.). Eng.

Associate Professor (Post-Retirement)

Ronald Gehr; B.Sc.(Eng.)(Witw.), M.A.Sc., Ph.D.(Tor.), P.Eng., F.C.S.C.E.

Professors

Vincent H. Chu; B.Eng.(Taiwan), M.A.Sc.(Tor.), Ph.D.(MIT), Eng.

Luc E. Chouinard; B.Eng., M.Eng.(Montr.), B.C.L.(McG.), Sc.D.(MIT), Eng.

Subhasis Ghoshal; B.C.E.(Jad.), M.S.(Missouri), Ph.D.(Carn. Mell), P.Eng.

Ghyslaine McClure; B.Eng.(Montr.), S.M.(MIT), Ph.D.(Montr.), Eng.

Mohamed A. Meguid; B.Sc.(al-Azhar), M.Sc., Ph.D.(UWO), P.Eng.

Denis Mitchell; B.A.Sc., M.A.Sc., Ph.D.(Tor.), F.A.C.I., Eng. (*Distinguished James McGill Professor*)

Van-Thanh-Van Nguyen; B.M.E.(Nat. IT, Saigon), M.C.E.(AIT), D.A.Sc.(École Poly., Montr.), Eng.

James Nicell; B.A.Sc., M.A.Sc., Ph.D.(Windsor), P.Eng.; *Dean, Faculty of Engineering*

Colin Rogers; B.A.Sc., M.A.Sc.(Wat.), Ph.D.(Syd.), P.Eng.

A. Patrick S. Selvadurai; M.S.(Stan.), D.I.C., Ph.D., D.Sc.(Nott.), F.R.S.C., F.E.I.C., F.I.M.A., F.C.S.C.E., P.Eng., C.Math. (*William Scott Professor*)

Yixin Shao; B.Sc., M.S.(Tongji), Ph.D.(N'Western), P.Eng., F.A.C.I.

Laxmi Sushama; B.Tech.(Kerala), M.Eng.(IISc, India), MS.(NUI), Ph.D.(Melb.) (*Trottier Chair in Sustainability Engineering and Design*)

Associate Professors

Andrew J. Boyd; B.Sc.Eng.(New Br.), M.A.Sc.(Tor.), Ph.D.(Br. Col.), P.Eng., F.A.C.I.

Dominic Frigon; B.Sc., M.Sc.(McG.), Ph.D.(Ill.-Urbana-Champaign), L.L.E.

Susan J. Gaskin; B.Sc.(Eng.)(Qu.), Ph.D.(Cant.), Eng.

Jinxia Liu; B.E./M.E.(Tianjin), M.E.(Rensselaer Poly.), Ph.D.(Purd.)

Luis Miranda-Moreno; B.Sc., M.Eng.(UAEM, Mexico), Ph.D.(Wat.)

Assistant Professor

Mary Kang; B.A.Sc., M.A.Sc.(Wat.), Ph.D.(Princ.)

Stephanie Loeb; B.Sc., M.Sc.(Toronto), Ph.D.(Yale)

Daniele Malomo; B.Sc., M.S. (Rome), Ph.D.(Pavia)

Lijun Sun; B.Eng.(Tsinghua), Ph.D.(NUS)

Yazhou (Tim) Xie; B.E., M.S.(Tongji), Ph.D.(Calif.-LA)

12.4.5 Master of Science (M.Sc.) Civil Engineering (Thesis) (45 credits)

The M.Sc. in Civil Engineering focuses on structures and structural materials; infrastructure rehabilitation; risk engineering; fluid mechanics and hydraulics; materials engineering; soil behaviour; soil mechanics and foundations; water resources engineering; environmental engineering; and transportation engineering. A two- to three-semester independent research project is undertaken in one of these fields, leading to a thesis.

Thesis Courses (27 credits)

CIVE 630	(3)	Thesis Research 1
CIVE 631	(3)	Thesis Research 2

CIVE 632	(3)	Thesis Research 3
CIVE 633	(6)	Thesis Research 4
CIVE 634	(6)	Thesis Research 5
CIVE 635	(6)	Thesis Research 6

Required Course

1 credit:

CIVE 662	(1)	Master's (Thesis) Research Seminar
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Complementary Courses (17 credits)

17 credits at the 500 or 600 level, with at least 8 credits at the 600 level.

12.4.6 Master of Engineering (M.Eng.) Civil Engineering (Non-Thesis): Environmental Engineering (45 credits)

The program consists of a minimum of 45 credits, of which, depending on the student's home department, a minimum of 5 and a maximum of 15 may be allotted to the research project. The balance of 30 to 40 credits is earned by coursework. The Department also allows students to complete the program using a minimum of 45 credits of coursework only.

The Environmental Engineering option is administered by the Faculty of Engineering. Further information may be obtained from the Program Coordinator, Department of Civil Engineering.

Research Project

(0 or 5-15 credits)

The program may include a project or, with Departmental approval, may be completed with courses only.

Required Courses (6 credits)

CHEE 591	(3)	Environmental Bioremediation
CIVE 615	(3)	Environmental Engineering Seminar

Complementary Courses

(24-39 credits)

a minimum of 22 credits chosen from the following:

Data analysis:

AEMA 611	(3)	Experimental Designs 1
CIVE 555	(3)	Environmental Data Analysis
PSYC 650	(3)	Advanced Statistics 1

Toxicology:

OCCH 612	(3)	Principles of Toxicology
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Water pollution engineering:

CIVE 651	(4)	Theory: Water / Wastewater Treatment
CIVE 652	(4)	Bioprocesses for Wastewater Resource Recovery
CIVE 660	(4)	Chemical and Physical Treatment of Waters

Air pollution engineering:

MECH 534 (3) Air Pollution Engineering

Soil and water quality management:

BREE 533 (3) Water Quality Management

CIVE 686 (4) Site Remediation

Environmental impact:

GEOG 551 (3) Environmental Decisions

GEOG 601 (3) Advanced Environmental Systems Modelling

Environmental policy

URBP 506 (3) Environmental Policy and Planning

Elective Courses

Also, 0-15 credits of graduate courses from an approved list of courses from the Faculties of Engineering, Agricultural and Environmental Sciences, Law, Management; Departments of Atmospheric and Oceanic Sciences, Biology, Chemistry, Earth and Planetary Sciences, Economics, Epidemiology and Biostatistics, Geography, Occupational Health, Political Science, School of Religious Studies, Sociology, and Bieler School of Environment.

12.4.7 Master of Engineering (M.Eng.) Civil Engineering (Non-Thesis) (45 credits)

The MEng Non-Thesis program aims to provide a more professional orientation to graduate students. The main features of this degree program are:

A minimum of 15 credits selected from a list of research oriented courses

A maximum of 30 credits with emphasis on expertise (specialty area) for professional practice.

Research Seminar (3 credits)

CIVE 664 (3) MEng (Non-thesis) Research Seminar

List A: Research Courses

(12-42) credits

A minimum of 12 credits from research courses, from one of the research streams: 1) Infrastructure, 2) Environmental/Hydraulics-Water Resources, and 3) Transportation.

Infrastructure Stream

CIVE 512 (3) Advanced Civil Engineering Materials

CIVE 602 (4) Finite Element Analysis

CIVE 603 (4) Structural Dynamics

CIVE 609 (4) Risk Engineering

CIVE 623 (4) Durability of Construction Materials

Environmental/Hydraulics-Water Resources

CIVE 555 (3) Environmental Data Analysis

CIVE 572 (3) Computational Hydraulics

CIVE 584 (3) Mechanics of Groundwater Flow

CIVE 651 (4) Theory: Water / Wastewater Treatment

CIVE 677 (4) Water-Energy Sustainability

Transportation

CIVE 540	(3)	Urban Transportation Planning
CIVE 542	(3)	Transportation Network Analysis
CIVE 560	(3)	Transportation Safety and Design
CIVE 609	(4)	Risk Engineering

List B: Other Complementary Courses from the Department

0-30 credits

Courses from List A that are not used to fulfill the 15 credits requirement of Research Courses can be used also as complementary courses.

CIVE 520	(3)	Groundwater Hydrology
CIVE 521	(3)	Nanomaterials and the Aquatic Environment
CIVE 527	(3)	Renovation and Preservation: Infrastructure
CIVE 550	(3)	Water Resources Management
CIVE 551	(3)	Environmental Transport Processes
CIVE 557	(3)	Microbiology for Environmental Engineering
CIVE 558	(3)	Biomolecular Techniques for Environmental Engineering
CIVE 561	(3)	Greenhouse Gas Emissions
CIVE 573	(3)	Hydraulic Structures
CIVE 574	(3)	Fluid Mechanics of Water Pollution
CIVE 577	(3)	River Engineering
CIVE 604	(4)	Theory of Plates and Shells
CIVE 605	(4)	Stability of Structures
CIVE 607	(4)	Advanced Design in Steel
CIVE 612	(4)	Earthquake-Resistant Design
CIVE 614	(4)	Composites for Construction
CIVE 615	(3)	Environmental Engineering Seminar
CIVE 616	(4)	Nonlinear Structural Analysis for Buildings
CIVE 617	(4)	Bridge Engineering
CIVE 618	(4)	Design in Concrete 1
CIVE 622	(4)	Prestressed Concrete
CIVE 624	(4)	Durability of Structures
CIVE 625	(4)	Condition Assessment of Existing Structures
CIVE 628	(4)	Design of Wood Structures
CIVE 637	(4)	Discrete Choice Modeling in Transportation
CIVE 652	(4)	Bioprocesses for Wastewater Resource Recovery
CIVE 660	(4)	Chemical and Physical Treatment of Waters
CIVE 661	(4)	Modelling of Transportation Emissions
CIVE 663	(4)	Environmental Fate of Organic Chemicals
CIVE 683	(4)	Advanced Foundation Design
CIVE 686	(4)	Site Remediation

Project Courses

0 or 5-15 credits

Credits for a program may vary, depending on the amount of work involved. Project courses are chosen from the following:

CIVE 691	(1)	Research Project 1
CIVE 692	(2)	Research Project 2
CIVE 693	(3)	Research Project 3
CIVE 694	(4)	Research Project 4
CIVE 695	(5)	Research Project 5
CIVE 696	(6)	Research Project 6
CIVE 697	(7)	Research Project 7

Graduate courses from other McGill Engineering Departments are also allowed as complementary courses. A maximum of 1/3 of coursework credits can be taken outside McGill. Approval is required from the Department in both cases.

12.4.8 Doctor of Philosophy (Ph.D.) Civil Engineering

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses

CIVE 701	(0)	Ph.D. Comprehensive Examination
CIVE 702	(0)	Ph.D. Research Proposal

Complementary Courses

6-8 credits at the 500 or 600 level taken from the Department of Civil Engineering.

12.5 Electrical and Computer Engineering

12.5.1 Location

Department of Electrical and Computer Engineering
 McConnell Engineering Building, Room 633
 3480 University Street
 Montreal QC H3A 0E9
 Canada
 Telephone: 514-398-7344 or 514-398-1406
 Email: grad.ece@mcgill.ca
 Website: mcgill.ca/ece

12.5.2 About Electrical and Computer Engineering

The Department offers programs of graduate studies leading to a degree of **Master of Science** (thesis), **Master of Engineering** (project/non-thesis) or **Doctor of Philosophy**.

The research interests and facilities of the Department are very extensive, involving more than 50 faculty members and 350 postgraduate students. The major activities are divided into the following groups:

- Bioelectrical Engineering;
- Telecommunications and Signal Processing;
- Systems and Control;

- Integrated Circuits and Systems;
- Nano-Electronic Devices and Materials;
- Photonic Systems;
- Computational Electromagnetics;
- Power Engineering;
- Intelligent Systems;
- Software Engineering.

The Department is equipped with state-of-the-art experimental laboratories and there are numerous multidisciplinary research projects, so students are provided with an ideal environment to develop new technologies, discover novel phenomena, and design revolutionary devices.

Research Facilities

The Department has extensive laboratory facilities for all its main research areas. In addition, McGill University often collaborates with other institutions for teaching and research.

- The *Centre for Intelligent Machines* (CIM) is an interdisciplinary research group focused on intelligent systems. Its laboratories include research in the domains of robotics, systems and control, computer vision, medical imaging, computer graphics, and machine learning.
- Telecommunications laboratories focus their work on signal processing, broadband communications, and networking; these laboratories form part of the *Centre for Systems, Technologies and Applications for Radiofrequency and Communications* (STARaCOM), a McGill University Research Centre devoted to fostering innovation in the area of communications systems and technologies via advanced research and training of highly qualified personnel.
- The *Integrated Microsystems Laboratory* (iML) supports research in FPGAs, MEMS, micro- and nano-systems, VLSI architectures for digital communications and signal processing, mixed signal, RF, and microwave integrated circuits and components, simulation of integrated circuits and microsystems, integrated antennas, design for testability, reconfigurable computing, high-speed circuits, and packaging.
- Antenna and microwave research, and optical fibre and integrated optics research are carried out in a fully equipped facility.
- The *Photonics Systems* laboratory includes continuous wave and femtosecond Ti: Sapphire lasers, diode lasers, extensive optics and optomechanics, and sophisticated electronic and imaging equipment.
- Solid state facilities include measurement equipment for magnetic and electric properties of materials, vacuum deposition, and RF sputtering systems.
- The *Computational Electromagnetics Laboratory* provides tools for numerical analysis, visualization, interface design, and knowledge-based system development.
- There is also a well-equipped laboratory for power electronics and power systems research.

The Department has extensive computer facilities. Most research machines are networked, providing access to a vast array of hardware. In addition, McGill University is linked to the *Centre de recherche informatique de Montréal* (CRIM) and the University Computing Centre.

There are three other universities in Montreal: Concordia University is the other English-language university; *l'Université de Montréal*, and its affiliated school of engineering, *l'École Polytechnique*, is the largest francophone university; *l'Université du Québec* has a campus in Montreal and in major towns throughout the province.

The proximity of these schools to McGill University ensures that a rich array of courses is available to suit individual needs. McGill also collaborates on research projects with many organizations such as *l'Institut de recherche d'Hydro-Québec* (IREQ) and *l'Institut national de la recherche scientifique* (INRS).

Financial Support

Graduate Assistantships: The Department awards several graduate assistantships to qualified full-time graduate students. These are normally funded from research grants or contracts awarded to individual faculty members. In return, the graduate assistant is expected to perform research-related tasks assigned by the professor from whose grant the assistantship is paid. A good part, but not necessarily all, of this work can be used for preparing a thesis. There is no special application form for graduate assistantships; all applicants who indicate a need for support on their application forms will be considered.

Teaching Assistantships: Graduate students, with the approval of their supervisors, may also undertake teaching assistantships for additional remuneration. These are awarded at the beginning of the term. The Department can make no prior commitments.

Graduate students can also receive financial aid through fellowships, loans, or bursaries. For more information, please refer to mcgill.ca/gps/funding, or contact:

Graduate and Postdoctoral Studies, McGill University
James Administration Building, Room 400
845 Sherbrooke Street West
Montreal QC H3A 0G4
Website: mcgill.ca/gps/contact/gps

section 12.5.5: Master of Science (M.Sc.) Electrical Engineering (Thesis) (45 credits)

** This program replaces the M.Eng. Electrical Engineering (Thesis) program as of January 2020 **

The Master of Science in Electrical Engineering (Thesis) is research-oriented and is expected to involve a thorough examination of a topic of current interest in the research area within the Department. Undertaking this program at McGill University provides students with an opportunity to conduct

section 12.5.5: Master of Science (M.Sc.) Electrical Engineering (Thesis) (45 credits)

intensive research under the supervision of researchers who are leaders in their field. The program is an ideal preparation for a Ph.D. degree or an industrial research career.

section 12.5.6: Master of Engineering (M.Eng.) Electrical Engineering (Non-Thesis) (45 credits)

The Master of Engineering degree (project option) involves graduate-level courses and an internally examined research project. The program is oriented more toward professional development than the thesis option. The project is of significantly less scope than a thesis, and includes options such as a technical review, a design project, or a small-scale research project. Students are provided with a very solid background in electrical and computer engineering, both in terms of breadth across the entire field and depth in the area of specialty. Graduates frequently pursue careers in research and development. A part-time program is possible.

section 12.5.7: Doctor of Philosophy (Ph.D.) Electrical Engineering

The Ph.D. degree recognizes a significant novel research contribution that is described in an externally examined thesis. Students who are admitted to this program normally have a master's degree. Research is conducted under the supervision of a faculty member. The Department provides an excellent environment for conducting research, with supervision by internationally renowned researchers and access to state-of-the-art experimental facilities. Graduates from the program most commonly pursue research and teaching careers in academia or research careers in industrial labs.

12.5.3 Electrical and Computer Engineering Admission Requirements and Application Procedures**12.5.3.1 Admission Requirements**

English Proficiency Requirement: Applicants to graduate studies whose mother tongue is not English, and who have not completed an undergraduate or graduate degree from a recognized foreign institution where English is the language of instruction or from a recognized Canadian institution (anglophone or francophone), must submit documented proof of competency in English. Accepted English language tests and minimum test score requirements can be found on our [website](#). Official results must be received before the application deadlines.

GRE: Submission of *GRE* (General Aptitude Test) scores is not mandatory. Applicants who have written the GRE are welcome to submit their scores for consideration.

Master's Degree (Admission Requirements)

The applicant must be the graduate of a recognized university and hold a bachelor's degree or its equivalent, as determined by McGill, in Electrical, Computer, or Software Engineering or a closely related field. An applicant holding a degree in another field of engineering or science will be considered but a Qualifying year may be required to make up any deficiencies. The applicant must have a high academic achievement: a standing equivalent to a **cumulative grade point average (CGPA) of 3.0 out of 4.0, or a GPA of 3.2 out of 4.0 for the last two full-time academic years or equivalent**. Satisfaction of these general requirements does not guarantee admission. Admission to graduate studies is limited and acceptance is highly competitive.

Ph.D. Degree (Admission Requirements)

In addition to satisfying the requirements for the Master's program, candidates must hold a suitable master's degree from a recognized university. The applicant must have a high academic achievement: a standing equivalent to a cumulative grade point average (CGPA) of 3.0 out of 4.0. Satisfaction of these general requirements does not guarantee admission. Admission to graduate studies is limited and acceptance is highly competitive.

12.5.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at mcgill.ca/gradapplicants/apply.

See [University Regulations & Resources](#) > Graduate > Graduate Admissions and Application Procedures > : [Application Procedures](#) for detailed application procedures.

The Department accepts most of its graduate students for September; the chance of acceptance for January is significantly lower.

12.5.3.2.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

- Area of Research and Applicant Profile Form – available at mcgill.ca/ece/admissions/graduate/apply
- *GRE* – the General Aptitude Test is optional.

12.5.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Electrical and Computer Engineering and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at mcgill.ca/gps/contact/graduate-program.

	Application Opening Dates		Application Deadlines	
	All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)	Current McGill Students (any citizenship)
Fall Term:	Sept. 15	Dec. 15	Dec. 15	Dec. 15
Winter Term:	Feb. 15	Aug. 1	Oct. 15	Oct. 15
Summer Term:	N/A	N/A	N/A	N/A

All supporting documents must be uploaded to the online application system ([uApply](#)) by the application deadlines.

Admission to graduate studies is competitive; accordingly, late and/or incomplete applications are considered only as time and space permit.

12.5.4 Electrical and Computer Engineering Faculty

Chair

Warren Gross

Associate Chair, Academic

Ioannis Psaromiligkos

Associate Chair, Undergraduate Programs

François Bouffard

Associate Chair, Graduate Programs

Odile Liboiron-Ladouceur

Associate Chair, Operations

Dennis Giannacopoulos

Emeritus Professors

Pierre R. Bélanger; B.Eng.(McG.), S.M., Ph.D.(MIT), F.I.E.E.E., Eng.

Maier L. Blostein; B.Eng., M.Eng.(McG.), Ph.D.(Ill.), F.I.E.E.E., Eng.

Peter Kabal; B.A.Sc., M.A.Sc., Ph.D.(Tor.)

Martin D. Levine; B.Eng., M.Eng.(McG.), Ph.D.(Lond.), F.C.I.A.R., F.I.E.E.E., Eng.

Boon-Teck Ooi; B.E.(Adel.), S.M.(MIT), Ph.D.(McG.), Eng.

Tomas J.F. Pavlasek; B.Eng., M.Eng., Ph.D.(McG.), Eng.

Nicholas C. Rumin; B.Eng., M.Sc., Ph.D.(McG.), Eng.

Jonathan P. Webb; B.A., Ph.D.(Camb.)

Professors

Tal Arbel; M.Eng., Ph.D.(McG.), P.Eng.

Benoit Boulet; B.Sc.(Laval), M.Eng.(McG.), Ph.D.(Tor.) P.Eng.

Peter E. Caines; B.A.(Oxf.), D.I.C., Ph.D.(Lond.), F.R.S.C., F.I.E.E.E., F.C.I.A.R. (*Distinguished James McGill Professor and William C. Macdonald Chair*) P.Eng. (*Currently on sabbatical*)

Benoit Champagne; B.Eng., M.Eng.(Montr.), Ph.D.(Tor.), P.Eng.

Lawrence Chen; B.Eng.(McG.), M.A.Sc., Ph.D.(Tor.), ing. (*Currently on sabbatical*)

James Clark; B.Sc., Ph.D.(Br. Col.), P.Eng.

Mark Coates; B.Eng.(Adel.), Ph.D.(Camb.), P.Eng.

Jeremy R. Cooperstock; A.Sc.(Br. Col.), M.Sc., Ph.D.(Tor.), ing.Jr.

Professors

Frank Ferrie; B.Eng., Ph.D.(McG.), P.Eng.
 Warren Gross; B.A.Sc.(Wat.), M.A.Sc., Ph.D.(Tor.) (*James McGill Professor*) P.Eng.
 Geza Joos; B.Sc.(C'dia), M.Eng., Ph.D.(McG.) (*CRC Chair*) P.Eng. (*Industrial Chair*). (*Currently on sabbatical*)
 Andrew G. Kirk; B.Sc.(Brist.), Ph.D.(Lond.) P.Eng.
 Fabrice Labeau; M.S., Ph.D.(Louvain) (*Deputy Provost, Student Life and Learning (SLL)*) P.Eng. (*Industrial Chair*)
 Harry Leib; B.Sc.(Technion), Ph.D.(Tor.)
 Tho Le-Ngoc; M.Eng.(McG.), Ph.D.(Ott.), F.I.E.E.E. (*CRC Chair*) P. Eng.
 David A. Lowther; B.Sc.(Lond.), Ph.D.(C.N.A.A.), F.C.A.E., P.Eng. (*Currently on sabbatical*)
 David V. Plant; M.S., Ph.D.(Brown), F.I.E.E.E., F.O.S.A., F.E.I.C., F.C.A.E. (*CRC Chair*) P.Eng.
 Gordon Roberts; B.A.Sc.(Wat.), M.A.Sc., Ph.D.(Tor.), F.I.E.E.E., Eng. (*James McGill Professor*) P.Eng.
 Martin Rochette; B.A., M.Eng., Ph.D.(Laval), P.Eng.
 Thomas Szkopek; B.A.Sc., M.A.Sc.(Tor.), Ph.D.(Calif.-LA), P.Eng.
 Dániel Varró; M.Sc., Ph.D.(BME)
 Zeljko Zilic; B.Eng.(Zagreb), M.Sc., Ph.D.(Tor.), P.Eng.

Associate Professors

François Bouffard; B.Eng., Ph.D.(McG.) (*William Dawson Scholar*) P.Eng.
 Christophe Dubach; M.Sc.(EPFL), Ph.D.(Edin.) (*Combined appointment with School of Computer Science*)
 Mourad El-Gamal; B.Sc.(Cairo), M.Sc.(Nashville), Ph.D.(McG.)
 Dennis Giannacopoulos; M.Eng., Ph.D.(McG.)
 Roni Khazaka; M.Eng., Ph.D.(Car.) (*Associate Dean (Academic Programs)*)
 Odile Liboiron-Ladouceur; B.Eng.(McG.), M.Sc., Ph.D.(Col.) (*CRC Tier 2*) P.Eng.
 Aditya Mahajan; B.Tech.(Indian IT), M.S., Ph.D.(Mich.), P.Eng.
 Muthucumaru Maheswaran; B.Sc.(Peradeniya), M.S.E.E., Ph.D.(Purd.) (*joint appt. with School of Computer Science*)
 Brett Meyer; B.S.(Wisc. Madison), M.S., Ph.D.(Carn. Mell), P.Eng.
 Hannah Michalska; B.Sc., M.Sc.(Warsaw), Ph.D.(Lond.) P.Eng.
 Gunter Mussbacher; Ph.D.(Ott.) (*William Dawson Scholar*) P.Eng.
 Derek Nowrouzehzrai; B.Sc.(Wat.), M.Sc., Ph.D.(Tor.) (*Endowed Chair*) (*Director of CIM*)
 Milica Popovich; B.Sc.(Colo.), M.Sc., Ph.D.(N'western), LL (*Associate Dean (Research & Innovation)*)
 Ioannis Psaromiligkos; B.Sc.(Patras), M.Sc., Ph.D.(SUNY, Buffalo), P.Eng.

Assistant Professors

Narges Armanfard; B.Sc.(Shahid), M.Sc.(Tarbiat Mod), Ph.D.(McM.)
 Sharmistha Bhadra; B.Sc.(New Br.), M.Sc., Ph.D.(Manit.) (*EIT*)
 Amin Emad; B.Sc.(Sharif), M.Sc.(Alta.), Ph.D.(Ill.) (*EIT*)
 Hsiu-Chin Lin; M.Sc.(UAlberta) Ph.D.(Edin.) (*Combined appointment with School of Computer Science*)
 AJung Moon; B.A.Sc.(Wat.), M.A.Sc., Ph.D.(Br.Col.)
 Boris Vaisband; B.S.(Technion), M.S., Ph.D.(Roch.)
 Xiaozhe Wang; B.Sc.(Zhejiang), M.Sc., Ph.D.(Cornell), P.Eng.
 Songrui Zhao; B.Sc.(Chu Ke-Chen), Ph.D.(Zhejiang), Ph.D.(McG)

Faculty Lecturer

Marwan Kanaan; B.Sc. (Beirut), M.A.Sc. (Windsor), Ph.D.(*expected 2021*, McGill), P.Eng.

Associate Members

Maxime Cohen; B.S., M.S.(Technion), Ph.D.(MIT)

Matthew Adam Dobbs; B.Sc.(McG.), Ph.D.(Vic., BC)

Gregory L. Dudek; B.Sc.(Qu.) M.Sc., Ph.D.(Tor.)

Alan C. Evans; Ph.D.(Leeds)

William R. Funnell; M.Eng., Ph.D.(McG.)

David Juncker; Ph.D.(Neuchâtel)

Samira A. Rahimi; B.Eng.(Tabriz) Ph.D. (Laval)

Adjunct Professors

Rhys Allan Adams, Donald Davis, Tiago H. Falk, Vincent Hayward, Mehrsan Javan-Roshtkhari, Innocent Kamwa, Marthe Kassouf, Morgan McGuire, Shane McIntosh, Zetian Mi, Frédéric Nabki, Douglas O'Shaughnessy, Michael Rabbat, Joseph J. Schlesinger, Joshua David Schwartz, Kenneth D. Wagner, Di Wu, Qunbi Zhuge

12.5.5 Master of Science (M.Sc.) Electrical Engineering (Thesis) (45 credits)

** This program replaces the M.Eng. Electrical Engineering-Thesis program as of January 1, 2020. **

The Master of Science in Electrical Engineering (Thesis) is research oriented and the thesis is expected to involve a thorough examination of a topic of current interest in the research area within the Department. Undertaking this program at McGill University provides students with an opportunity to conduct intensive research under the supervision of researchers who are leaders in their field. The program is an ideal preparation for a Ph.D. degree or an industrial research career.

The M.Sc. Thesis program must be completed on a full-time basis in no more than three years. The following requirements must be met:

Thesis Courses (27 credits)

ECSE 691	(4)	Thesis Research 1
ECSE 692	(4)	Thesis Research 2
ECSE 693	(4)	Thesis Research 3
ECSE 694	(4)	Thesis Research 4
ECSE 695	(4)	Thesis Research 5
ECSE 696	(4)	Thesis Research 6
ECSE 697	(4)	Thesis Research 7

Students who choose the thesis option must register for all 27 credits during the three terms of residency.

Complementary Courses (18 credits)

18 credits of 500-, 600-, or 700-level courses, of which no more than 6 credits may be outside the Department.*

* Non-departmental courses require Departmental approval. Students may be allowed to take more than 6 credits of non-Departmental courses; a letter of recommendation from their supervisor outlining the reason for such an action is required.

12.5.6 Master of Engineering (M.Eng.) Electrical Engineering (Non-Thesis) (45 credits)

The M.Eng. in Electrical Engineering (project option) involves an internally examined research project in addition to 27 graduate level course credits. The program is oriented more towards professional development than the thesis option. The project is of significantly less scope than a thesis, and includes options such as a technical review, a design project, or a small-scale research project. Undertaking 27 course credits provides students with a very solid background in electrical and computer engineering, both in terms of breadth across the entire field and depth in the area of specialty. Graduates frequently pursue careers in research and development. A part-time program is possible.

Research Project (18 credits)

ECSE 651	(1)	M.Eng. Project 1
ECSE 652	(2)	M.Eng. Project 2
ECSE 653	(3)	M.Eng. Project 3

ECSE 654	(4)	M.Eng. Project 4
ECSE 655	(4)	M.Eng. Project 5
ECSE 656	(4)	M.Eng. Project 6

Students who choose the non-thesis option must register for the project courses during the three required terms of residency.

Complementary Courses (27 credits)

27 credits of 500-, 600-, or 700-level courses, of which no more than 9 credits may be outside the Department.

* Non-departmental courses require Departmental approval. Students may be allowed to take more than 9 credits of non-Departmental courses; a letter of recommendation from their supervisor outlining the reason for such an action is required.

12.5.7 Doctor of Philosophy (Ph.D.) Electrical Engineering

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses

ECSE 701	(0)	Ph.D. Qualifying Examination
ECSE 702	(0)	Ph.D. Research Plan Proposal
ECSE 703	(0)	Doctoral Research Seminar

In addition to the successful completion of the required courses above, students must complete the courses prescribed by the student's Supervisory Committee.

12.6 Mechanical Engineering

12.6.1 Location

Department of Mechanical Engineering
 Macdonald Engineering Building
 817 Sherbrooke Street West, Room MD-270
 Montreal QC H3A 0C3
 Canada
 Telephone: 514-398-8869 or 514-398-6281
 Fax: 514-398-7365
 Email: grad.mecheng@mcgill.ca
 Website: mcgill.ca/mecheng/grad

12.6.2 About Mechanical Engineering

Mechanical engineers are traditionally concerned with the conception, design, implementation, and operation of mechanical systems. Common fields of work include aerospace, energy, manufacturing, machinery, and transportation. Due to the broad nature of the discipline, there is usually a high demand for mechanical engineers with advanced training.

The Department includes more than 30 faculty members and 200 graduate students, and is housed primarily within the recently renovated Macdonald Engineering building. The Department contains state-of-the-art experimental facilities (including a major wind tunnel facility) and has extensive computational facilities. Professors within the Department collaborate widely with professors in other units, often through research centres including the Centre for Intelligent Machines (CIM); the McGill Institute for Advanced Materials (MIAM); and the Montreal Neurological Institute and Hospital (MNI). The research interests within the Department are very broad and fall largely within the following seven areas:

- Aerodynamics and fluid mechanics
- Bioengineering
- Combustion and energy systems

- Design and manufacturing
- Dynamics and control
- Materials and structures
- Vibrations, acoustics, and fluid-structure

Within these areas, specific topics of research are given in the following:

Aerodynamics and fluid mechanics

Experimental fluid mechanics and aerodynamics, aeroelasticity, and aeroacoustics; theoretical fluid mechanics; turbulence; mixing in turbulent flows; fluid flow control; fluid-structure interactions; computational fluid dynamics, multidisciplinary optimization, and computer flow visualization; heat transfer; combustion, shock wave physics, energetic materials, high-speed reacting flows, hypersonic propulsion, and alternative fuels.

Bioengineering

Biomechanics, biomaterials, blood and respiratory flows, mechanics of soft tissues, cardiovascular devices, image processing for medical diagnostics, voice production.

Combustion and energy systems

Combustion, shock wave physics, heat transfer, and compressible gas dynamics.

Design and manufacturing

Design theory and methodology, design optimization; biomimetics; machine tools and systems, manufacturing processes, and management and control; micro/nano machining; wear and comminution processes.

Dynamics and control

Multibody systems, legged and wheeled vehicles, compliant mechanisms, and kinematic geometry; tethered systems, lighter-than-air craft, and underwater vehicles; spacecraft dynamics and space robotics; modelling and simulation; fluid-structure interactions, nonlinear and chaotic dynamics; dynamics of bladed assemblies.

Materials and structures

Composite materials: structural design, analysis, manufacturing, and processing; micro/nano mechanics; MEMS/NEMS; adaptronic structures; thermomechanics, wave propagation, and computational mechanics.

Vibrations, acoustics, and fluid-structure

Vibrations, acoustics, and fluid-structure interaction.

Programs Offered

The Department offers programs of study leading to the M.Sc., and Ph.D. degrees in Mechanical Engineering. Both M.Sc. (Thesis) and M.Eng. (Non-Thesis) programs are offered.

There are several options for completing master's degrees that do not involve the completion of a thesis. The M.Eng. (Non-Thesis) program has more extensive course requirements and will appeal to students who desire to gain both a broad understanding of subjects within Mechanical Engineering as well as in-depth information in a specific area. Other non-thesis master's degree options are described below.

section 12.6.8: Master of Science (M.Sc.) Mechanical Engineering (Thesis) (45 credits)

M.Sc. is a research program requiring a minimum of 45 credits to be distributed as follows: 28 credits of thesis work, a set of one-semester courses with a combined weight of no less than 16 credits, and a one-credit seminar. The M.Sc. program is a full-time program.

section 12.6.5: Master of Engineering (M.Eng.) Mechanical Engineering (Non-Thesis) (45 credits)

Students in this program must complete required courses in addition to several complementary courses and a seminar course. They also complete a project that is less involved than a thesis, and may involve a limited research project or a technical or design study. Graduates of this program are well-prepared for carrying out research and development in industry and may also proceed to further research at the Ph.D. level.

section 12.6.6: Master of Engineering (M.Eng.) Aerospace Engineering (Non-Thesis) (45 credits)

The M.Eng. Aerospace degree is offered to students who wish to specialize in the general area of aerospace engineering. This degree is given in conjunction with Concordia University, Polytechnique Montréal, the Université Laval, the Université de Sherbrooke, and the École de Technologie Supérieure. Students registered at McGill are required to take two courses from two other institutions.

The aerospace industry is strongly established in Quebec. Representatives of the aerospace industry therefore requested that measures be taken to provide for qualified scientists in aerospace. Five universities offering courses in engineering came together to offer a master's degree program in the field of aeronautics and space technology. This program is offered to students who wish to specialize in these disciplines. The industry's participation is a special feature of this program. The universities and the participating industries, with the cooperation of the Centre of Aerospace Manpower Activities in Quebec (CAMAQ), have formed a Coordinating Committee, CIMGAS, to arrange for industrial internships and case study courses for the students and to implement specific program developments to meet the needs of the industry.

section 12.6.6: Master of Engineering (M.Eng.) Aerospace Engineering (Non-Thesis) (45 credits)

The M.Eng. (Aerospace) program requires both coursework and an “Industrial Stage” (i.e., engineering work in an aerospace industry) of four months. Enrolment is limited to the number of industrial stages available, so admission to the program is typically quite competitive. While intended to be a full-time program, the M.Eng. Aerospace program may be completed on a part-time basis over a maximum of five years. By the time of completion of the program, graduates are extremely well-prepared to enter into a career in the aerospace industry.

Depending on their background, students would specialize in one of the four areas:

1. Aeronautics and Space Engineering
2. Avionics and Control
3. Aerospace Materials and Structures
4. Virtual Environment

section 12.6.7: Master of Management (M.M.) Manufacturing Management (Non-Thesis) (56 credits)

This program is currently not offered

The Master in Manufacturing Management (M.M.M.) program attracts business professionals from around the world who wish to pursue a career in the effective management of global operations and supply chain. It is a professionally-oriented graduate program offered jointly through the Faculties of Engineering and Management, aimed at those candidates with engineering or science backgrounds.

In just eleven months of academic studies, M.M.M. students sharpen their expertise in supply chain and operations through an intensive program that includes:

- A challenging curriculum
- Extensive industrial interaction
- Innovative research projects

Additionally, students are exposed to the latest trends and developments in management and participate in professional development seminars to leverage their communication and leadership skills. After less than one year of studies, participants complete a paid work term at an industrial location. This is a unique opportunity to work on a real-world project with an M.M.M. partner company in North America.

section 12.6.9: Doctor of Philosophy (Ph.D.) Mechanical Engineering

In the Ph.D. program, students are required to demonstrate a significant new contribution to their field of research, as documented in an externally reviewed thesis. The research is carried out under the supervision of professors who are leaders in their field. Since research in Mechanical Engineering is often interdisciplinary in nature, it is common for Ph.D. students to have a co-supervisor in addition to their principal supervisor. Graduates from this program typically proceed to careers in research in either industrial or academic environments.

12.6.3 Mechanical Engineering Admission Requirements and Application Procedures**12.6.3.1 Admission Requirements**

The general rules of Graduate and Postdoctoral Studies apply. Candidates who come from other institutions are expected to have an academic background equivalent to the undergraduate curriculum in mechanical engineering at McGill or to make up any deficiencies in a Qualifying year.

Applicants to the M.Sc. (Thesis) program must hold an undergraduate degree (or equivalent) in Engineering or a degree in Physical, Math or Computer Sciences.

Applicants to the M.Eng. (Non-Thesis) program must hold an undergraduate degree (or equivalent) in Mechanical Engineering.

Applicants to the M.Eng. (Aerospace) program must hold an undergraduate degree (or equivalent) in Engineering. Applicants must be proficient in French.

Applicants to the Ph.D. program must have successfully completed a master's degree program (or equivalent) in Engineering or the Physical Sciences. In exceptional circumstances, students with outstanding performance at the bachelor's level may be offered direct entry into the Ph.D. program (Ph.D. 1).

In the case of all programs, applicants must have successfully completed their prior degree(s) with a minimum CGPA equivalent to 3.3 on a scale of 4.0. Satisfaction of these minimum requirements does not guarantee admission. Applicants to graduate studies whose mother tongue is not English, and who have not completed an undergraduate or graduate degree from a recognized foreign institution where English is the language of instruction or from a recognized Canadian institution (anglophone or francophone), must submit official results of either a *TOEFL* or an *IELTS* test. The minimum score required is 92 for the Internet-based TOEFL test, with each component score not less than 20, or a minimum overall band of 7.0 on the IELTS test.

12.6.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at mcgill.ca/gradapplicants/apply.

See [University Regulations & Resources](#) > Graduate > Graduate Admissions and Application Procedures > : [Application Procedures](#) for detailed application procedures.

Please consult mcgill.ca/mecheng/grad for further details on required application documents.

12.6.3.2.1 Additional Requirements

The items and clarifications below are additional requirements set by this department:

- two official Referee Letters
- Personal Statement – one page
- Curriculum Vitae – please include a list of publications, if relevant

12.6.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Mechanical Engineering and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at mcgill.ca/gps/contact/graduate-program.

Application Opening Dates		Application Deadlines		
		All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)
Fall Term:	Sept. 15	Jan. 15	Jan. 15	Jan. 15
Winter Term:	Feb. 15	Aug. 1	Oct. 15	Oct. 15
Summer Term:	N/A	N/A	N/A	N/A

Admission to graduate studies is competitive; accordingly, late and/or incomplete applications are considered only as time and space permit.

12.6.4 Mechanical Engineering Faculty

Chair

Rosaire Mongrain

Associate Chair (Curriculum Affairs)

Arun Misra

Associate Chair (Undergraduate Affairs)

Mathias Legrand

Associate Chair (Graduate Affairs)

Meyer Nahon

Director, M.Eng. Aerospace Program

Tim Lee

Emeritus Professors

Abdul M. Ahmed; B.Sc.(Dhaka), Ph.D.(McG.), ing. (*Thomas Workman Emeritus Professor of Mechanical Engineering*)

Jorge Angeles; B.Sc., M.Sc.(UNAM, Mexico), Ph.D.(Stan.), Eng., F.A.S.M.E., F.C.S.M.E., F.C.A.E., F.R.S.C.

Romuald Knystautas; B.Eng., M.Eng., Ph.D.(McG.), ing.

John H.S. Lee; B.Eng.(McG.), M.Sc.(MIT), Ph.D.(McG.)

Dan F. Mateescu; M.Eng.(Bucharest Tech), Ph.D.(Rom. Acad. Sci.), Doctor Honoris Causa(Bucharest Tech), A.F.A.I.A.A., F.C.A.S.I.

Michael P. Paidoussis; B.Eng.(McG.), Ph.D.(Camb.), ing., F.I. Mech.E., F.A.S.M.E., F.A.A.M., F.C.S.M.E., F.R.S.C., F.C.A.E. (*Thomas Workman Emeritus Professor of Mechanical Engineering*)

Stuart J. Price; B.Sc., Ph.D.(Brist.), P.Eng.

Associate Professors (Post-Retirement)

Vince Thomson; B.Sc.(Windsor), Ph.D.(McM.)

Paul J. Zsombor-Murray; B.Eng., M.Eng., Ph.D.(McG.), ing., F.C.S.M.E.

Professors

Marco Amabili; M.Sc.(MPU), Ph.D.(Bologna), F.A.S.M.E., F.C.A.E. (*Canada Research Chair*)

Bantwal R. Baliga; B.Tech.(IIT Kanpur), M.Sc.(Case West.), Ph.D.(Minn.)

Jeffrey M. Bergthorson; B.Sc.(Manit.), M.Sc., Ph.D.(Caltech), P.Eng. (*William Dawson Scholar*)

David L. Frost; B.A.Sc.(Br. Col.), M.S., Ph.D.(Caltech), P.Eng.

Wagdi G. Habashi; B.Eng., M.Eng.(McG.), Ph.D.(Cornell), ing., F.A.S.M.E., F.A.I.A.A., F.C.A.E., F.R.S.C. (*NSERC; Lockheed Martin; Bell Helicopter Industrial Research Chair*)

Andrew J. Higgins; B.Sc.(Ill.-Urbana-Champaign), M.S., Ph.D.(Wash.)

Pascal Hubert; B.Eng., M.A.Sc.(École Poly., Montr.), Ph.D.(Br. Col.), ing. (*Warner Graupe Professor*)

Jozsef Kövecses; M.Sc.(Miskolc), Ph.D.(Hung. Acad. Sci.), ing.

Larry B. Lessard; B.Eng.(McG.), M.Sc., Ph.D.(Stan.), ing.

Arun K. Misra; B.Tech.(IIT KPG), Ph.D.(Br. Col.), P.Eng., F.A.A.S., F.A.I.A.A., F.C.A.E. (*Thomas Workman Professor of Mechanical Engineering*)

Luc Mongeau; B.Sc., M.Sc.(École Poly., Montr.), Ph.D.(Penn St.), ing. (*Canada Research Chair*)

Rosaire Mongrain; B.Sc., M.Sc.(Montr.), Ph.D.(École Poly., Montr.), ing.

Meyer Nahon; B.Sc.(Qu.), M.A.Sc.(Tor.), Ph.D.(McG.), ing., A.F.A.I.A.A., F.C.A.S.I.

Damiano Pasini; M.Eng.(Pavia), Ph.D.(Brist.), ing. (*James McGill Professor*)

Inna Sharf; B.A.Sc., Ph.D.(Tor.), A.F.A.I.A.A.

Associate Professors

James R. Forbes; B.Eng.(Wat.), M.A.Sc., Ph.D.(Tor.) (*William Dawson Scholar*)

Michael Kokkolaras; Dipl.Ing.(TUM), Ph.D.(Rice), F.A.S.M.E.

Tim Lee; M.S.(Port. St.), Ph.D.(Idaho)

Mathias Legrand; M.Sc., Ph.D.(Centrale Nantes)

Laurent Mydlarski; B.Sc.(Wat.), Ph.D.(Cornell)

Siva Nadarajah; B.Sc.(Kansas), M.S., Ph.D.(Stan.), A.F.A.I.A.A.

Evgeny V. Timofeev; M.Sc., Ph.D.(SPbSTU), Eng., A.F.A.I.A.A.

Yaoyao Fiona Zhao; B.Eng.(BIT), M.Eng., Ph.D.(Auck.) (*William Dawson Scholar*)

Assistant Professors

Changhong Cao; B.S.(Changchun), M.S.(SUNY, Stony Brook), Ph.D.(Tor.)

Mark Driscoll; B.Eng.(McG.), M.Sc.(Montr.), Ph.D.(École Poly., Montr.), P.Eng.

Jianyu Li; B.Eng.(Zhejiang), M.Sc., Ph.D.(Harv.)

Jovan Nedic; M.Eng., Ph.D.(Imperial Coll.)

Audrey A. Sedal; S.B. (MIT), M.S., Ph.D. (UMich)

Mélanie Tétreault-Friend; B.Eng.(McG.), M.Sc., Ph.D.(MIT)

Adjunct Professors

Helmi Attia; B.Sc., M.Sc.(AlexandriaU), Ph.D.(McG.)

François Barthelat; M.Sc.(Roch.), Ph.D.(N'western)

Gilles Bourque; B.Sc.(Sher.), M.Sc., Ph.D.(INRS)

Xinyu Liu; B.Eng., M.Eng.(Harbin Inst. Tech.), Ph.D.(Tor.)

Mouhab Meshreki; B.Sc., M.Sc.(AUC), Ph.D.(McG.)

Alireza Najafi-Yazdi; B.Sc, M.Sc.(Tehran), Ph.D.(McG.)

Senior Academic Associate

Amar Sabih

Course Lecturers

Farhang Daneshmand

Richard Klopp

12.6.5 Master of Engineering (M.Eng.) Mechanical Engineering (Non-Thesis) (45 credits)

Research Project (13 credits)

MECH 603	(9)	M. Eng. Project 1
MECH 604	(3)	M. Eng. Project 2
MECH 609	(1)	Seminar

Note: Industrial liaison is encouraged in these courses taken near the end of the program.

Required Courses (16 credits)

MECH 605	(4)	Applied Mathematics 1
MECH 610	(4)	Fundamentals of Fluid Dynamics
MECH 632	(4)	Advanced Mechanics of Materials
MECH 642	(4)	Advanced Dynamics

Complementary Courses (16 credits)

A minimum of 16 credits (500, 600, or 700 level) from the Faculty of Engineering may be selected by the student, based on interest and the choice of area of concentration. Courses at the graduate level from other faculties may also be taken, with prior approval from the student's project supervisor and the Graduate Program Director. A maximum of 3 credits of FACC courses at the 500, 600, or 700 level may be credited toward the degree.

12.6.6 Master of Engineering (M.Eng.) Aerospace Engineering (Non-Thesis) (45 credits)

The M.Eng. Aerospace Degree is offered to the students who wish to specialize in the general area of aerospace engineering. This degree is given in conjunction with Concordia University, École Polytechnique, Université Laval, Université de Sherbrooke, and École de Technologie Supérieure. Students registered at McGill are required to take two courses from two other institutions.

Depending on their background, students would specialize in one of the four areas:

1. Aeronautics and Space Engineering
2. Avionics and Control
3. Aerospace Materials and Structures
4. Virtual Environment

Required Courses (9 credits)

MECH 687	(3)	Aerospace Case Studies
MECH 688	(6)	Industrial Stage

Complementary Courses (36 credits)

The other courses, depending on the area of concentration, will be chosen in consultation with an Aerospace Engineering Adviser. A maximum of 3 credits of FACC courses at the 500, 600, or 700 level may be credited toward the degree.

12.6.7 Master of Management (M.M.) Manufacturing Management (Non-Thesis) (56 credits)

M.M. in Manufacturing Management, Non-Thesis program provides a professional, hands-on approach that addresses all major issues germane to the optimization of operations. The program moved beyond a manufacturing focus to all facets of supply chains, logistics and manufacturing management. A key feature of the program is industry participation and interaction. To ensure a profound comprehension of the issues and challenges facing business today, courses have corporate sponsors and partners that provide case studies, plant tours, seminars, industrial projects and internships. The

major emphasis of these activities is on improving productivity and operational effectiveness. The program aims at training the students with diversified backgrounds who wish to pursue a career in the top management of global operations and supply chain.

A version of M.M. in Manufacturing Management, Non-Thesis program is collaboratively offered with Zhejiang University Hangzhou in China.

Required Courses (30 credits)

MGSC 602	(3)	Strategic Management of Operations
MGSC 603	(3)	Logistics Management
MGSC 605	(3)	Total Quality Management
MGSC 608	(3)	Data Decisions and Models
MGSC 609	(1)	Operations Industrial Seminar
MGSC 610	(2)	Operations Case Studies
MGSC 611	(9)	Operations Industrial Stage
MGSC 614	(3)	Computer Integrated Manufacturing
MGSC 631	(3)	Analysis: Production Operations

Complementary Courses (26 credits)

8 credits from General Business and Management Training

MGCR 611	(2)	Financial Accounting
MGCR 612	(2)	Organizational Behaviour
MGCR 616	(2)	Marketing
MGCR 641	(2)	Elements of Modern Finance 1

18 credits from both General Business and Management and Manufacturing and Supply Chain.

General Business and Management

ACCT 624	(3)	Management Accounting: Planning and Control
INDR 603	(3)	Industrial Relations
MGSC 604	(2)	Managerial Communication in Supply Chain Management
MGSC 607	(1)	Corporate Social Responsibility in Supply Chain Management
ORGB 625	(3)	Managing Organizational Change
ORGB 632	(3)	Managing Teams in Organizations
ORGB 633	(3)	Managerial Negotiations
ORGB 640	(3)	The Art of Leadership
ORGB 685	(3)	Cross Cultural Management

Manufacturing and Supply Chain

MGSC 615	(3)	Procurement and Distribution
MGSC 617	(3)	Product Design
MGSC 618	(3)	Data Analytics Foundations in Supply Chain Management
MGSC 690	(3)	Advanced Topics in Management Science 1

12.6.8 Master of Science (M.Sc.) Mechanical Engineering (Thesis) (45 credits)

The M.Sc. in Mechanical Engineering is a research-oriented program that focuses on planning and conducting research as well as organizing and presenting research results, supervised by one or more professors who are experts in the field.

Thesis Courses (28 credits)

MECH 691*	(3)	M.Sc. Thesis Literature Review
MECH 692	(4)	M.Sc.Thesis Research Proposal
MECH 693	(3)	M.Sc.Thesis Progress Report 1
MECH 694	(6)	M.Sc. Thesis Progress Report 2
MECH 695	(12)	M.Sc. Thesis

* Note: MECH 691 must be completed in the first term of the student's program.

Required Course

1 credit:

MECH 609	(1)	Seminar
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Complementary Courses (16 credits)

A minimum of 16 credits (500, 600, or 700 level) from the Faculty of Engineering or Faculty of Science, at least 8 of which must be from within the Faculty of Engineering. FACC courses will not count toward the complementary course credits.

12.6.9 Doctor of Philosophy (Ph.D.) Mechanical Engineering

Candidates normally register for the M.Eng. degree in the first instance. However, in exceptional cases where the research work is proceeding very satisfactorily, or where the equivalent of the M.Eng. degree has been completed at another university, candidates may be permitted to proceed directly to the Ph.D. degree without submitting a master's thesis as long as they have satisfied the course requirements for the M.Eng. degree.

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses

MECH 700	(0)	Ph.D. Literature Review
MECH 701	(0)	Ph.D. Thesis Proposal
MECH 702	(0)	Ph.D. Comprehensive Preliminary Oral Examination

12.7 Mining and Materials Engineering

12.7.1 Location

Department of Mining and Materials Engineering
M.H. Wong Building
3610 University Street
Montreal QC H3A 0C5
Canada
Email: barbara.hanley@mcgill.ca
Website: mcgill.ca/minmat

Mining Engineering
Telephone: 514-398-2215
Fax: 514-398-7099

Materials Engineering
Telephone: 514-398-4383

Fax: 514-398-4492

12.7.2 About Mining and Materials Engineering

Mining Engineering

- Geomechanics
- Mining Environments
- Strategic Mine Planning and Optimization
- Stochastic Modelling
- Operations Research
- Rock Mechanics
- Mine Safety
- Mine Ventilation
- Renewable Energy
- Mineral Economics
- Materials Handling
- Environmental Engineering

Materials Engineering

- Process Metallurgy
- Computational Thermodynamics
- Effluent and Waste Treatment
- Mineral Processing
- Metal Casting and CFD Modelling
- Surface Engineering and Coatings
- Additive Manufacturing and Powder Metallurgy
- Ceramics
- Electron Microscopy
- Automotive and Aerospace Materials
- Biomaterials
- Nanomaterials and Nanoelectronic Materials
- Multiscale Modelling of Materials
- Electronic and Solar Cell Materials
- Environmental Engineering

Research Degrees

section 12.7.6: Master of Science (M.Sc.) Materials Engineering (Thesis) (45 credits)

Please consult the Department for more information about the M.Sc. Materials Engineering (Thesis) program.

section 12.7.7: Master of Science (M.Sc.) Mining Engineering (Thesis) (45 credits)

Please consult the Department for more information about the M.Sc. Mining Engineering (Thesis) program.

Direct Transfer from a Master's to a Ph.D. – Students enrolled in a master's program (thesis) may transfer into the Ph.D. program without obtaining a master's degree if they have:

1. an excellent academic standing for their undergraduate degree;
2. been in the master's program for less than 12 months;
3. passed with the minimum CGPA of 3.6 at least three of the required master's courses, and given one seminar with a minimum grade of A-;
4. made good progress with their research;
5. obtained a strong letter of recommendation from their supervisor.

Direct Entry from B.Eng. to Ph.D.

Exceptional B.Eng. and B.Sc. graduates may be admitted directly to the Ph.D. program. The Ph.D. 1 students admitted through this process are required to complete at least four graduate-level courses.

M.Eng. (Project) Degrees

section 12.7.8: Master of Engineering (M.Eng.) Materials Engineering (Non-Thesis) (45 credits)

Please consult the Department for more information about the M.Eng. Materials Engineering (Project) program.

section 12.7.9: Master of Engineering (M.Eng.) Materials Engineering (Non-Thesis): Environmental Engineering (45 credits)

Please consult the Department for more information about the M.Eng. Materials Engineering (Non-Thesis) program.

section 12.7.10: Master of Engineering (M.Eng.) Mining Engineering (Non-Thesis) (45 credits)

Please consult the Department for more information about the M.Eng. Mining Engineering (Project) program.

section 12.7.11: Master of Engineering (M.Eng.) Mining Engineering (Non-Thesis): Environmental Engineering (45 credits)

Please consult the Department for more information about the M.Eng. Mining Engineering (Non-Thesis) program.

section 12.7.12: Doctor of Philosophy (Ph.D.) Materials Engineering

Please consult the Department for more information about the Ph.D.

section 12.7.13: Doctor of Philosophy (Ph.D.) Mining Engineering

Please consult the Department for more information about the Ph.D.

section 12.7.14: Graduate Diploma (Gr. Dip.) Mining Engineering (30 credits)

This program normally requires one academic year of full-time study to complete. Candidates are required to take an integrated group of courses based on their academic background.

12.7.3 Mining and Materials Engineering Admission Requirements and Application Procedures

12.7.3.1 Admission Requirements

The **Graduate Diploma in Mining Engineering** is open to graduates with suitable academic standing in any branch of engineering or science. It is designed to provide a sound technical mining engineering background to candidates intending to work in the minerals industry.

The **M.Sc. (Thesis)** degree is open to graduates holding the B.Eng. degree or its equivalent in Materials Engineering, Mining Engineering or other related engineering fields.; or B.Sc. degree in Chemistry, Materials Science, Physics, Geology, or related fields.

The **Master of Engineering (Project) (Materials option)** is primarily designed to train people with appropriate engineering or scientific backgrounds to allow them to work effectively in the metals and materials industries. Industrial experience is favourably viewed for entrance into the program, but is not considered a necessity.

The **Master of Engineering (Project) (Mining option)** is primarily designed for graduates from mining engineering programs who have received adequate academic training in modern mining technology, mineral economics, computer programming, and probabilities and statistics. Students without this academic training must complete a Qualifying term. Industrial experience is favourably viewed for entrance into the program, but is not considered a necessity.

The Master of Engineering (Project) (Environmental Engineering option) is also offered.

Ph.D. degree applicants may either be “directly transferred” from the M.Eng. or M.Sc. program (see below) or hold an acceptable master's degree in Materials Engineering, Mining Engineering, or other related fields, or under exceptional circumstances may be admitted directly from the bachelor's degree. In the latter case they are admitted to Ph.D. 1 as opposed to those holding a master's degree, who are admitted to Ph.D. 2.

12.7.3.2 Application Procedures

McGill's online application form for graduate program candidates is available at mcgill.ca/gradapplicants/apply.

See [University Regulations & Resources](#) > Graduate > Graduate Admissions and Application Procedures > : [Application Procedures](#) for detailed application procedures.

12.7.3.3 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Mining and Materials Engineering and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at mcgill.ca/gps/contact/graduate-program.

Application Opening Dates		Application Deadlines		
		All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)
Fall Term:	Sept. 15	Jan. 15	Jan. 15	Jan. 15
Winter Term:	Feb. 15	Sept. 1	Oct. 15	Oct. 15
Summer Term:	May 15	Jan. 15	Jan. 15	Jan. 15

Admission to graduate studies is competitive; accordingly, late and/or incomplete applications are considered only as time and space permit.

12.7.4 Mining and Materials Engineering Faculty

Department Chair

Richard Chromik

Director, Mining Engineering

Mustafa Kumral

Associate Chair, Materials Engineering

Jun Song

Associate Chair & Graduate Program Director

Mathieu Brochu

Graduate Program Coordinator

Barbara Hanley

Emeritus Professors

James A. Finch; B.Sc.(Birm.), M.Eng., Ph.D.(McG.), Eng., F.C.I.M., F.R.S.C. (*Gerald G. Hatch Emeritus Professor*)

John E. Gruzleski; B.Sc., M.Sc.(Qu.), Ph.D.(Tor.), Eng., F.C.I.M., F.A.S.M. (*Gerald G. Hatch Emeritus Professor*)

John J. Jonas; B.Eng.(McG.), Ph.D.(Cant.), Eng., F.A.S.M., F.R.S.C. (*Henry Birks Emeritus Professor*)

Gordon W. Smith; B.Eng., M.Eng., Ph.D.(McG.), Eng.

Professors

Richard Chromik; B.Sc.(Penn. St.), M.Sc., Ph.D. (SUNY, Binghamton), P.Eng. (Hatch Faculty Fellow)

George P. Demopoulos; Dipl.Eng.(Nat. Tech., Athens), M.Sc., Ph.D.(McG.), Eng., F.C.I.M. (*Gerald G. Hatch Professor*)

Roussos Dimitrakopoulos; B.Sc.(Thessaloniki), M.Sc.(Alta.), Ph.D.(École Poly., Montr.) (*Canada Research Chair*)

Raynald Gauvin; B.Eng., Ph.D.(École Poly., Montr.), Eng. (*Henry Birks Professor*)

Roderick I.L. Guthrie; B.Sc., Ph.D.(Imperial Coll.), D.I.C., Eng., A.R.S.M., F.C.I.M., F.R.S.C. (*William C. Macdonald Professor*)

Faramarz (Ferri) P. Hassani; B.Sc., Ph.D.(Nott.) (*George Boyd Webster Professor*)

Hani S. Mitri; B.A.Sc.(Cairo), M.Eng., Ph.D.(McM.), Eng., F.C.I.M.

Stephen Yue; B.Sc., Ph.D.(Leeds), P.Eng. (*James McGill Professor*) (*Lorne Trottier Chair in Aerospace Engineering*)

Associate Professors

Kirk Bevan; B.Eng.(UWO), Ph.D.(Purd.), P.Eng.
Mathieu Brochu; B.Eng.(Laval), Ph.D.(McG.), Eng. (*Hatch Faculty Fellow*)
Marta Cerruti; B.Sc., Ph.D., Laurea in Chemistry(Turin), P.Eng. (*Canada Research Chair II*)
Mainul Hasan; B.Eng.(Dhaka), M.Eng.(KFUPM), Ph.D.(McG.)
Mustafa Kumral; B.Eng.(Hacettepe), M.Eng.(Çukurova), Ph.D.(Leeds), P.Eng.
Showan Nazhat; B.Eng., M.Sc., Ph.D.(Lond.), P.Eng.
Sidney Omelon; B.Eng., M.Eng., Ph.D.(McG.), Eng.
Mihriban Pekguleryuz; B.Sc., M.Eng.(Flor.), Ph.D.(McG.), Eng.
Nathaniel Quitarano; B.S.(Calif., Berk.), Ph.D.(MIT), P.Eng.
Agus Pulung Sasmito; B.Eng.(Gadjah Mada), Ph.D.(NUS)
Jun Song; B.Sc.(USTC), M.Sc., Ph.D.(Princ.), P.Eng.
Kristian Waters; M.Eng., M.Sc.(UMIST), Ph.D.(Birm.), P.Eng.

Assistant Professor

Jinhyuk Lee; B.S.(Seoul), Ph.D.(MIT)
Alessandro Navarra; B.Eng., M.Sc. (McG.), Ph.D.(École Poly., Montr.)
Philippe Ouzilleau; B.Eng., M.Sc., Ph.D. (Ecole Poly., Montr.)

Professor of Practice

Karim Zaghbi; Dip., Ph.D. (Grenoble INP)

Adjunct Professors

Behnam Ashrafi; B.Sc.(SUT, Tehran), M.Eng, Ph.D.(McG.)
Salim Brahimi; B.Eng, M.Eng., Ph.D.(McG.)
Alexandros Charitos; Dipl. Eng.(Nat. Tech., Athens), Ph.D.(Stuttgart)
Michel Gamache; B.Eng., M.Sc.A.. Ph.D.(École Poly., Montr.)
Tassos Grammatikopoulos; B.Sc.(Patras), M.Sc.(Acad.), Ph.D.(Qu.)
Ahmad Hemami; B.Sc.(Tehran), M.Sc., Ph.D.(Salf.)
In-Ho Jung; B.Sc., M.Sc.(POSTECH), Ph.D.(École Poly., Montr.)
Luis Javier Montiel Petro; B.Eng(U. Nacional, Colombia), Ph.D.(McG.)
Amina Lamghari; B.Sc., M.Sc.(U. Mohammed V, Rabat), Ph.D.(Montr.)
Jan Nettet; B.Eng., M.Eng., Ph.D.(McG.)
Michel Trudeau; B.Sc., M.Sc., Ph.D. (Montr.)
Priti Wanjara; B.Eng., Ph.D.(McG.)

Senior Faculty Lecturer

Florence Paray; B.Eng.(CSP, France), M.Eng., Ph.D.(McG.), Eng.

Faculty Lecturer – Mining

Shahe Shnorhokian

Course Lecturer – Mining

Yves Buro

Co-op Program Liaison Officers

Genevieve Snider (*Materials*)

Co-op Program Liaison OfficersLisa Thiess (*Mining*)**12.7.5 Master of Engineering (M.Eng.) Mining Engineering (Thesis) (45 credits)**

** This program is no longer offered **

The M.Eng. in Mining Engineering (Thesis) is a research-oriented degree that focuses on skills and knowledge of mining engineering through coursework and a research thesis under the supervision of a Faculty member (professor). Specific emphasis is placed on research methods as well as fundamentals; as such, the program is the more suitable option for those whose primary interest is research. Graduates of this degree either pursue a Ph.D. or work in industry. The M.Eng. (Thesis) degree is open to graduates holding the B.Eng. degree or its equivalent in Mining Engineering or other related engineering fields.

Thesis Courses (27 credits)

MIME 690	(6)	Thesis Research 1
MIME 691	(3)	Thesis Research 2
MIME 692	(6)	Thesis Research 3
MIME 693	(3)	Thesis Research 4
MIME 694	(6)	Thesis Research 5
MIME 695	(3)	Thesis Research 6

Required Course (6 credits)

MIME 601	(0)	Engineering Laboratory Practice
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6 credits from the following:

MIME 672D1	(3)	Rock Mechanics Seminar
MIME 672D2	(3)	Rock Mechanics Seminar
MIME 673	(6)	Mining Engineering Seminar

* Note: Students must register for MIME 672D1 and MIME 672D2 in consecutive terms.

Complementary Courses (12 credits)

12 credits at the 500-level or higher selected from within and/or outside the Department in consultation with the student's supervisor and/or Advisory Committee.

12.7.6 Master of Science (M.Sc.) Materials Engineering (Thesis) (45 credits)

The M.Sc. in Materials Engineering (Thesis) is a research-oriented program that focuses on research skills and knowledge of materials engineering through coursework and a research thesis under the supervision of a Faculty member (professor). Emphasis is placed on research methods, as well as fundamentals. As such, the program is the more suitable option for those whose primary interest is research. The M.Sc. (Thesis) is for candidates with a Bachelor's degree in Engineering or from a discipline relevant to materials engineering.

Thesis Courses (27 credits)

MIME 690	(6)	Thesis Research 1
MIME 691	(3)	Thesis Research 2
MIME 692	(6)	Thesis Research 3
MIME 693	(3)	Thesis Research 4
MIME 694	(6)	Thesis Research 5
MIME 695	(3)	Thesis Research 6

Required Courses (9 credits)

MIME 601	(0)	Engineering Laboratory Practice
MIME 610D1	(1.5)	Master's Foundation Course
MIME 610D2	(1.5)	Master's Foundation Course
MIME 670	(6)	Research Seminar 1

Complementary Courses (9 credits)

9 credits at the 500-level or higher selected from within and/or outside the Department in consultation with the student's supervisor and/or Advisory Committee.

12.7.7 Master of Science (M.Sc.) Mining Engineering (Thesis) (45 credits)

The M.Sc. in Mining Engineering focuses on both fundamental and applied research. A two- to three-semester independent research project, leading to a thesis, is undertaken in any research area of mining science, engineering or technology, as well as closely related fields.

Thesis Courses (27 credits)

MIME 690	(6)	Thesis Research 1
MIME 691	(3)	Thesis Research 2
MIME 692	(6)	Thesis Research 3
MIME 693	(3)	Thesis Research 4
MIME 694	(6)	Thesis Research 5
MIME 695	(3)	Thesis Research 6

Required Courses (6 credits)

MIME 601	(0)	Engineering Laboratory Practice
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6 credits from the following:

MIME 672D1*	(3)	Rock Mechanics Seminar
MIME 672D2*	(3)	Rock Mechanics Seminar
MIME 673	(6)	Mining Engineering Seminar

* Note: Students must register for MIME 672D1 and MIME 672D2 in consecutive terms.

Complementary Courses (12 credits)

12 credits at the 500-level or higher selected from within and/or outside the Department in consultation with the student's supervisor and/or Advisory Committee.

12.7.8 Master of Engineering (M.Eng.) Materials Engineering (Non-Thesis) (45 credits)

The Master of Engineering in Materials Engineering: Non-Thesis program is primarily designed to train people with appropriate engineering or scientific background to allow them to work effectively in the materials industries.

Research Project (15 credits)

MIME 680	(6)	Materials Engineering Project 1
MIME 681	(6)	Materials Engineering Project 2
MIME 682	(3)	Materials Engineering Project 3

Required Courses (6 credits)

MIME 601	(0)	Engineering Laboratory Practice
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MIME 670	(6)	Research Seminar 1
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Complementary Courses (24 credits)

12 credits of MIME courses at the 500 level or higher.

12 credits of courses at the 500 level or higher from within and/or outside the Department in consultation with the Program Adviser.

12.7.9 Master of Engineering (M.Eng.) Materials Engineering (Non-Thesis): Environmental Engineering (45 credits)

This interdepartmental graduate option leads to a Master of Engineering (M.Eng.) Materials Engineering: Non-Thesis-Environmental Engineering. The objective of the option is to train environmental professionals at an advanced level. The program is designed for individuals with an undergraduate degree in engineering. The Environmental Engineering option emphasizes interdisciplinary fundamental knowledge, practical perspectives, and awareness of environmental issues through a wide range of technical and non-technical courses offered by collaborating departments and faculties at the University. Students are strongly encouraged to consult with the Graduate Program Director prior to enrolling in the program.

Research Project (6 credits)

MIME 680	(6)	Materials Engineering Project 1
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Required Courses (6 credits)

CHEE 591	(3)	Environmental Bioremediation
CIVE 615	(3)	Environmental Engineering Seminar

Complementary Courses (22 credits)

(minimum 22 credits)

Data Analysis Course

One of the following courses:

AEMA 611	(3)	Experimental Designs 1
CIVE 555	(3)	Environmental Data Analysis
PSYC 650	(3)	Advanced Statistics 1

Toxicology Course

One of the following courses:

OCCH 612	(3)	Principles of Toxicology
OCCH 616	(3)	Occupational Hygiene

Water Pollution Engineering Course

One of the following courses:

CIVE 651	(4)	Theory: Water / Wastewater Treatment
CIVE 652	(4)	Bioprocesses for Wastewater Resource Recovery
CIVE 660	(4)	Chemical and Physical Treatment of Waters

Air Pollution Engineering Course

One of the following courses:

CHEE 592	(3)	Industrial Air Pollution Control
MECH 534	(3)	Air Pollution Engineering

Soil and Water Quality Management Course

One of the following courses:

BREE 533	(3)	Water Quality Management
CIVE 686	(4)	Site Remediation

Environmental Impact Course

One of the following courses:

GEOG 551	(3)	Environmental Decisions
GEOG 601	(3)	Advanced Environmental Systems Modelling

or an approved 500-, 600-, or 700-level alternative.

Environmental Policy Course

URBP 506	(3)	Environmental Policy and Planning
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or an approved 500-, 600-, or 700-level alternative.

Elective Courses (11 credits)

(minimum 11 credits)

Another project course and/or Engineering or non-Engineering 500-, 600-, or 700-level course subject to approval of the Department.

The relevant Project course in Materials Engineering is the following:

MIME 681	(6)	Materials Engineering Project 2
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12.7.10 Master of Engineering (M.Eng.) Mining Engineering (Non-Thesis) (45 credits)

The Master of Engineering in Mining: Non-Thesis program is primarily designed for graduates from mining engineering programs who have received adequate academic training in modern mining technology, mineral economics, computer programming, and probabilities and statistics.

Research Project (15 credits)

MIME 628	(6)	Mineral Engineering Project 1
MIME 629	(6)	Mineral Engineering Project 2
MIME 634	(3)	Mineral Engineering Project 3

Required Courses (6 credits)

MIME 601	(0)	Engineering Laboratory Practice
MIME 673	(6)	Mining Engineering Seminar

Complementary (24 credits)

12 credits of MIME courses at the 500 level or higher.

12 credits of courses at the 500 level or higher from within and/or outside the Department in consultation with the Program Adviser.

12.7.11 Master of Engineering (M.Eng.) Mining Engineering (Non-Thesis): Environmental Engineering (45 credits)

Students are strongly encouraged to consult with the Graduate Program Director prior to enrolling in the program.

Research Project (6 credits)

MIME 628 (6) Mineral Engineering Project 1

Required Courses (6 credits)

CHEE 591 (3) Environmental Bioremediation
CIVE 615 (3) Environmental Engineering Seminar

Complementary Courses (22 credits)

(minimum 22 credits)

Data Analysis Course

3 credits from the following:

AEMA 611 (3) Experimental Designs 1
CIVE 555 (3) Environmental Data Analysis
PSYC 650 (3) Advanced Statistics 1

Toxicology Course

3 credits from the following:

OCCH 612 (3) Principles of Toxicology
OCCH 616 (3) Occupational Hygiene

Water Pollution Engineering Course

4 credits from the following:

CIVE 651 (4) Theory: Water / Wastewater Treatment
CIVE 652 (4) Bioprocesses for Wastewater Resource Recovery
CIVE 660 (4) Chemical and Physical Treatment of Waters

Air Pollution Engineering Course

3 credits from the following:

CHEE 592 (3) Industrial Air Pollution Control
MECH 534 (3) Air Pollution Engineering

Soil and Water Quality Management Course

3-4 credits from the following:

BREE 533 (3) Water Quality Management
CIVE 686 (4) Site Remediation

Environmental Impact Course

3 credits from the following:

GEOG 551 (3) Environmental Decisions
GEOG 601 (3) Advanced Environmental Systems Modelling

or an approved 500-, 600-, or 700-level alternative.

Environmental Policy Course

3 credits from the following:

URBP 506 (3) Environmental Policy and Planning

or 3 credits approved at the 500-, 600-, or 700-level alternative.

Elective Courses (10-11 credits)

Another project course and/or Engineering or non-Engineering 500-, 600-, or 700-level course subject to approval of the Department.

The relevant Project course in Mining Engineering is the following:

MIME 629 (6) Mineral Engineering Project 2

12.7.12 Doctor of Philosophy (Ph.D.) Materials Engineering

Candidates for this degree must complete a minimum of two lecture courses assigned by the Department,

selected on the basis of previous academic training and research interests. Candidates must also pass a safety training course, participate in an appropriate Research Seminar course, and take a preliminary examination within their first year of Ph.D. study.

The candidate must submit an acceptable thesis based upon successfully completed research and must satisfy the examiners in an oral examination of the thesis.

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses (9 credits)

MIME 601	(0)	Engineering Laboratory Practice
MIME 701	(0)	Ph.D. Thesis Research Proposal
MIME 703	(0)	Ph.D. Comprehensive Exam
MIME 710D1	(1.5)	Ph.D. Foundation Course
MIME 710D2	(1.5)	Ph.D. Foundation Course
MIME 771	(6)	Research Seminar 2

Complementary Courses (6 credits)

6 credits of courses at the 500 level or higher, approved by their supervisor.

12.7.13 Doctor of Philosophy (Ph.D.) Mining Engineering

Candidates for this degree must complete a minimum of two lecture courses assigned by the Department, selected on the basis of previous academic training and research interests. Candidates must also pass a safety training course, participate in an appropriate Research Seminar course and, take a preliminary examination within their first year of Ph.D. study.

Thesis

A thesis for the doctoral degree must constitute original scholarship and must be a distinct contribution to knowledge. It must show familiarity with previous work in the field and must demonstrate ability to plan and carry out research, organize results, and defend the approach and conclusions in a scholarly manner. The research presented must meet current standards of the discipline; as well, the thesis must clearly demonstrate how the research advances knowledge in the field. Finally, the thesis must be written in compliance with norms for academic and scholarly expression and for publication in the public domain.

Required Courses (6 credits)

MIME 601	(0)	Engineering Laboratory Practice
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MIME 702	(0)	Ph.D. Preliminary Examination
MIME 704	(0)	Ph.D. Comprehensive Examination in Mining Engineering
MIME 776	(6)	Ph.D. Research Seminar

Complementary Courses (6 credits)

6 credits of courses at the 500 level or higher, approved by their supervisor.

12.7.14 Graduate Diploma (Gr. Dip.) Mining Engineering (30 credits)**Required Course (6 credits)**

MIME 601	(0)	Engineering Laboratory Practice
MIME 673	(6)	Mining Engineering Seminar

Complementary Courses (24 credits)

24 credits of courses at the 500 level or higher selected from within and/or outside the department in consultation with the Program Adviser.

12.8 Urban Planning**12.8.1 Location**

School of Urban Planning
 Macdonald Harrington Building, Room 400
 815 Sherbrooke Street West
 Montreal QC H3A 0C2
 Canada
 Telephone: 514-398-4075
 Fax: 514-398-8376
 Email: admissions.planning@mcgill.ca
 Website: mcgill.ca/urbanplanning

12.8.2 About Urban Planning

Urban planning is the process by which a community shapes its environment to meet its needs and realize its aspirations. Urban planning is also the profession of those who facilitate this process. While the practice of planning is as old as the cities themselves, the Urban Planning profession is only about a century old. In the late 19th and early 20th centuries, architects, landscape architects, engineers, government reformers, lawyers, public health specialists, and others joined forces to tackle the serious social and environmental problems of the industrial city. They created new techniques and institutions to improve living conditions and decision-making processes, with an eye to improving cities in terms of health, safety, efficiency, equity, beauty, identity, etc. Today, people who enter the profession come from diverse backgrounds as well, including the design professions, engineering and applied sciences, environmental and social studies, and other fields. Their challenge is to reinvent tools and procedures to meet new challenges in making cities socially, economically and environmentally sustainable. A key feature of planning education is learning to view issues in a multidisciplinary way, to manage processes of collaboration and of conflict, and to generate equitable and efficient solutions to complex problems of urban development.

McGill University was the first institution in Canada to offer a full-time planning program starting in 1947. In 1972, the School of Urban Planning was created as a separate academic unit within the Faculty of Engineering. It shares a heritage building with the School of Architecture, right on the main open space of McGill's Downtown campus. The primary objective of the **Master of Urban Planning** program is to educate professional urban planners for leadership in the public, private, and not-for-profit sectors. We rely in large part on project-based learning. The program also puts great emphasis on students doing policy-relevant research.

The School's teaching and research activities pertain primarily to community planning; environmental policy and planning; international development planning; land-use planning and regulation; transportation and infrastructure planning; and urban development and urban design. These activities, which are conducted for the purpose of promoting better decision-making and improving human environments, often take place in partnership with other McGill departments (notably Architecture, Civil Engineering, Geography, and Law) and with units at other institutions in Montreal, across Canada, and abroad. The School uses Montreal and its region as its main teaching laboratory.

McGill's School of Urban Planning has a strong track record of contributing to the community and to the profession. It works with civil society as well as with government, at home and abroad, to understand urban challenges and to formulate policies and plans to meet them.

Master of Urban Planning (M.U.P.) Program

The Master of Urban Planning (M.U.P.) program is a two-year course of study that attracts students from Quebec, Canada, the U.S., and overseas. It is recognized by the *Ordre des urbanistes du Québec* (OUQ) and the *Canadian Institute of Planners* (CIP). Graduates may become full members of the OUQ and other provincial planning associations by completing their respective internship and examination requirements.

The M.U.P. program was designed with a strong emphasis on project-based learning, in particular through practical work done in teams in three planning studios. Approximately half of the curriculum is devoted to required courses that teach basic knowledge and skills in urban planning; the other half enables students to select courses or research projects that match their particular interests. Students participate actively in professors' research programs or define their individual research objectives, sometimes with their own research funding from major agencies (e.g., *SSHRC*, *NSERC*).

The core program provides a general education in spatial planning in its functional, environmental, and social dimensions. Formal specializations are available in **Transportation Planning** and **Urban Development & Urban Design**. Further information concerning these concentrations is available at mcgill.ca/urbanplanning/programs. In all cases, electives, the summer internship, and the Supervised Research Project allow for individual concentration on a particular topic.

Graduates of the M.U.P. program work as planners, designers, and policy analysts, as researchers, advocates, and mediators, and they do so at various levels of government, in civil-society organizations, and with private consulting firms. Although their area of expertise varies, they devote their efforts in increasing numbers to sustainable development in its environmental, social, and economic dimensions.

section 12.8.5: Master of Urban Planning (M.U.P.) Urban Planning (Non-Thesis) (60 credits)

The M.U.P. program requires two years of study, including a three-month summer internship in a professional setting. Upon completion of the program, graduates are expected to have acquired basic planning skills, a broad understanding of urban issues, and specialized knowledge in a field of their own choice.

section 12.8.6: Master of Urban Planning (M.U.P.) Urban Planning (Non-Thesis): Transportation Planning (60 credits)

The Transportation Planning concentration enables students to specialize in this field as part of their course of study for the M.U.P. degree. A number of core courses and electives, the summer internship, and the Supervised Research Project must be devoted to the acquisition of skills (including in quantitative analysis) necessary to work as a transportation planner. Admission into the concentration is based on a competitive selection process at the end of the first year of study in the M.U.P. program.

section 12.8.7: Master of Urban Planning (M.U.P.) Urban Planning (Non-Thesis): Urban Development and Urban Design (60 credits)

The Urban Development and Urban Design concentration produces graduates who are skilled in analysis and design for development in existing (sub)urban landscapes and urbanizing contexts, whether in North America or elsewhere. A series of courses on urban design, real estate, the politics of development, and urban governance enhance the core curriculum of the professionally-accredited M.U.P. program. Additional courses address innovative approaches to urban development, contemporary urban form, community-based design, globalization and development, and the adaptive redesign of suburban contexts, in addition to enduring topics such as housing, public space, cultural landscapes, and environmental planning. Students seeking to specialize in Urban Development and Urban Design apply at the end of their first year of study; admission into the concentration is based on performance in the first year of study and demonstration of spatial literacy, numeric competency, communication skills, and understanding of complex development processes.

section 12.8.8: Doctor of Philosophy (Ph.D.) Urban Planning, Policy and Design

The Ph.D. in Urban Planning, Policy and Design prepares students for advanced research and teaching on the processes that govern the management, development, and evolution of towns and cities. During the first two years, under their supervisor's and advisory committee's guidance, students follow courses, refine their research topic, and explore their area of expertise, leading up to comprehensive and proposal exams. They then proceed to write and submit a thesis based on their own original research.

12.8.3 Urban Planning Admission Requirements and Application Procedures

12.8.3.1 Application Procedures

McGill's online application form for graduate program candidates is available at mcgill.ca/gradapplicants/apply.

See [University Regulations & Resources](#) > Graduate > Graduate Admissions and Application Procedures > : [Application Procedures](#) and mcgill.ca/urbanplanning/how-apply for detailed application procedures.



Note: The M.U.P. program is not offered on a part-time basis.

12.8.3.1.1 Additional Requirements

The items and clarifications below are additional requirements set by this department for the **Master of Urban Planning (M.U.P.) program**. Applicants are required to upload:

- Personal Statement (one to two pages)
- Curriculum Vitae

- Proof of competency in oral and written English for applicants whose mother tongue is not English, and who have not completed an undergraduate or graduate degree from a recognised foreign institution where English is the language of instruction or from a recognised Canadian institution (anglophone or francophone). By the application deadline for the program, appropriate exam results must be sent electronically directly from the *TOEFL* (Test of English as a Foreign Language) or *IELTS* (International English Language Testing Systems) Office (Note: McGill's Institutional Code is 0935). The minimum requirement for the TOEFL is a score of 100 on the Internet-based test (iBT), with each component score not less than 23. The minimum score for the IELTS test is 7.0, with a score of at least 6.5 for each component.

The items and clarifications below are additional requirements set by this department for the **Doctor of Philosophy (Ph.D.) Urban Planning, Policy and Design**: Applicants are required to upload:

- a current version of their curriculum vitae
- a preliminary research proposal, not exceeding three pages, including:
 - an outline of long-term career goals
 - an explanation of how you consider that a Ph.D. in UPPD would help you achieve those goals
 - a detailed discussion of research interests and intended research plans and approaches
- Three letters of recommendation, at least two of which must be from a current or past professor
- Proof of English proficiency. Minimum score the same as for the M.U.P. program
- Two examples of independent written work (e.g., course papers, articles, chapters, research reports) in English or in French. The two pieces must be uploaded together as a single document, which should not exceed 60 pages

Awards and Financial Assistance

The Admissions Committee decides the allocation of internal awards for incoming students after the application deadline, and they are allocated, in part, based on merit; no special application is needed to be considered for this funding. Canadian students can also enter the program with a major external fellowship from a government funding agency such as *SSHRC* or *NSERC*. Descriptions of the external awards can be found at mcgill.ca/gps/funding.

12.8.3.2 Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the School of Urban Planning and may be revised at any time. Applicants must verify all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at mcgill.ca/gps/contact/graduate-program.

	Application Opening Dates		Application Deadlines	
	All Applicants	Non-Canadian citizens (incl. Special, Visiting & Exchange)	Canadian citizens/Perm. residents of Canada (incl. Special, Visiting & Exchange)	Current McGill Students (any citizenship)
Fall Term:	Sept. 15	Jan. 15	Jan. 15	Jan. 15
Winter Term:	N/A	N/A	N/A	N/A
Summer Term:	N/A	N/A	N/A	N/A

Admission to graduate studies is competitive; accordingly, late and /or incomplete applications are considered only as time and space permit.

12.8.4 Urban Planning Faculty

Director

Richard Shearmur

Emeritus Professor

Jane Matthews-Glenn; B.A., LL.B.(Qu.), D. en droit(Strasbourg)

Professor (Post-Retirement)

David Brown; B.A.(Bishop's), M.U.P.(McG.), Ph.D.(Sheff.)

Professors

Ahmed El-Geneidy; B.A.A., M.Arch.(AlexandriaU), Ph.D.(Port. St.)

Richard Shearmur; B.A.(Camb.), M.U.P.(McG.), Ph.D.(Montr.)

Associate Professors

Madhav G. Badami; B.Tech., M.S.(IIT Madras) M.E.Des.(Calg.), Ph.D.(Br. Col.) (*joint appt. with Bieler School of Environment*)

Lisa Bornstein; B.Sc.(Calif., Berk.), M.R.P.(Cornell), Ph.D.(Calif., Berk.)

Nik Luka; B.A.A.(Ryerson), M.Arch.(Laval), Ph.D.(Tor.) (*joint appt. with Peter Guo-hua Fu School of Architecture*)

David Wachsmuth; B.A.(McG.), M.Sc.(Tor.), Ph.D.(NYU)

Assistant Professor

Anna Kramer; B.Env.D.(Dal.), M.Arch.(Dal.), Ph.D.(Wat.)

Adjunct Professors

Suzanne Doucet; B.A.(Ott.), B.E.D.S. (Dal.), M.Arch.(Dal.),M.Sc.Arch.(Laval)

Jayne Engle; B.Sc.(Eastern U., Penn.), M.B.A.(Temple), M.U.R.P.(Pitt.), Ph.D.(McG.)

Gorka Espiau; B.S.S., Ph.D.(Basque Country)

Nilson Espino; B.Arch.(USMA, Panama), M.Sc.(Ariz.), Ph.D.(Rice)

Murtaza Haider; B.Sc.(UET Peshawar), M.A.Sc., Ph.D.(Tor.)

Marc-André LeChasseur; LL.B.(Sher.), LL.M.(Montr.)

Mario Polèse; B.A.(CUNY), M.A., Ph.D.(Penn.)

Ray Tomalty; B.A., M.P.A.(Qu.), Ph.D.(Wat.)

Associate Members

Cameron Charlebois; B.Sc.(Arch.), B.Arch., M.B.A.(McG.)

Kevin Manaugh; B.A.(Naropa), M.U.P., Ph.D.(McG.)

Sarah Moser; B.A.(Vic., BC), M.L.A.(Tor.), Ph.D.(NUS)

Instructors

Mark Elsworthy, Daniel Goodfellow, Martin Wexler

12.8.5 Master of Urban Planning (M.U.P.) Urban Planning (Non-Thesis) (60 credits)

The M.U.P. requires two years of study and research including a three-month summer internship in a professional setting. Upon completion of the program, graduates are expected to have acquired basic planning skills, a broad understanding of urban issues, and specialized knowledge in a field of their own choice.

** Students interested in the Barbados Field Study semester option should contact the department on its availability **

Required Courses (42 credits)

URBP 609	(1)	Planning Graphics 1
URBP 610	(1)	Planning Graphics 2
URBP 611	(1)	Planning Graphics 3
URBP 612	(3)	History and Theory of Planning
URBP 622	(6)	Planning Studio 1
URBP 623	(6)	Planning Studio 2
URBP 624	(6)	Planning Studio 3
URBP 628	(0)	Practical Experience
URBP 630	(3)	Supervised Research Project 1
URBP 631	(3)	Supervised Research Project 2
URBP 632	(6)	Supervised Research Project 3
URBP 635	(3)	Planning Law
URBP 640	(1)	Introduction to Planning Statistics

URBP 641	(1)	Reading the Urban Landscape
URBP 642	(1)	Introduction to Planning Data

Complementary Courses (18 credits)

Students are encouraged to complete at least one course in each of the four areas of design, environment, housing, and transportation.

Group A

1-3 credits from the following:

URBP 505	(3)	Geographic Information Systems
URBP 643	(1)	Introduction to Geographic Information Systems

Group B

9-17 credits from the following:

ARCH 515	(3)	Sustainable Design
CIVE 540	(3)	Urban Transportation Planning
CIVE 561	(3)	Greenhouse Gas Emissions
GEOG 504	(3)	Advanced Economic Geography
GEOG 525	(3)	Asian Cities in the 21st Century
URBP 501	(2)	Principles and Practice 1
URBP 503	(3)	Public Transport: Planning and Operations
URBP 504	(3)	Planning for Active Transportation
URBP 506	(3)	Environmental Policy and Planning
URBP 514	(4)	Community Design Workshop
URBP 530	(3)	Urban Infrastructure and Services in International Context
URBP 536	(2)	Current Issues in Transportation 1
URBP 537	(2)	Current Issues in Transportation 2
URBP 541	(1)	Selected Topics in Planning
URBP 542	(1)	Selected Topics in Visual Analysis
URBP 543	(3)	Special Topics
URBP 553	(3)	Urban Governance
URBP 555	(3)	Real Estate and Planning
URBP 556	(3)	Urban Economy: A Spatial Perspective
URBP 557	(3)	Rethinking Zoning
URBP 604	(3)	Urban Design Seminar
URBP 607	(3)	Reading Course: Urban Planning
URBP 608	(3)	Advanced GIS Applications
URBP 616	(3)	Selected Topics 1
URBP 617	(3)	Selected Topics 2
URBP 618	(3)	Selected Topics 3
URBP 619	(4)	Land Use and Transport Planning
URBP 620	(4)	Transport Economics
URBP 625	(2)	Principles and Practice 2
URBP 626	(2)	Principles and Practice 3

URBP 629	(3)	Planning Theory and Practice in a Globalizing World
URBP 644	(1)	Multivariate Statistics
URBP 645	(1)	Social Research Methods 1
URBP 646	(1)	Social Research Methods 2
URBP 647	(1)	Selected Methods in Planning 1
URBP 648	(1)	Selected Methods in Planning 2
URBP 649	(1)	Visual and Spatial Methods
URBP 651	(3)	Redesigning Suburban Space
URBP 656	(3)	Urban Innovation and Creativity

Group C

0-8 credits from the following:

Students may take up to 9 credits of coursework offered at the 500 or 600 levels by any academic unit at McGill or at another Montreal university, with the approval of the School, if they help students to develop an in-depth knowledge of one or more subject areas in the field of planning, with the approval of the School. Choices usually include courses in real-estate analysis, urban geography, sociology, anthropology, law, politics, and environmental science. Students must confirm prior to registration that the selected course(s) can be counted toward the M.U.P. degree.

12.8.6 Master of Urban Planning (M.U.P.) Urban Planning (Non-Thesis): Transportation Planning (60 credits)

The Master of Urban Planning (M.U.P.) Urban Planning (Non-Thesis); Transportation Planning option enables students to specialize in this field as part of their course of study for the Master of Urban Planning degree (M.U.P.). Studio courses, an internship, and a final project involve real-life applications and research.

Required Courses (49 credits)

URBP 505	(3)	Geographic Information Systems
URBP 609	(1)	Planning Graphics 1
URBP 610	(1)	Planning Graphics 2
URBP 611	(1)	Planning Graphics 3
URBP 612	(3)	History and Theory of Planning
URBP 619	(4)	Land Use and Transport Planning
URBP 622	(6)	Planning Studio 1
URBP 623	(6)	Planning Studio 2
URBP 624	(6)	Planning Studio 3
URBP 628	(0)	Practical Experience
URBP 630	(3)	Supervised Research Project 1
URBP 631	(3)	Supervised Research Project 2
URBP 632	(6)	Supervised Research Project 3
URBP 635	(3)	Planning Law
URBP 640	(1)	Introduction to Planning Statistics
URBP 641	(1)	Reading the Urban Landscape
URBP 642	(1)	Introduction to Planning Data

Complementary Courses (11 credits)

Group A

5-11 credits from the following:

CIVE 540	(3)	Urban Transportation Planning
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CIVE 561	(3)	Greenhouse Gas Emissions
CIVE 637	(4)	Discrete Choice Modeling in Transportation
CIVE 661	(4)	Modelling of Transportation Emissions
URBP 503	(3)	Public Transport: Planning and Operations
URBP 504	(3)	Planning for Active Transportation
URBP 506	(3)	Environmental Policy and Planning
URBP 536	(2)	Current Issues in Transportation 1
URBP 537	(2)	Current Issues in Transportation 2
URBP 608	(3)	Advanced GIS Applications
URBP 620	(4)	Transport Economics

Group B

0-6 credits

Students may take up to 6 credits of coursework at the 500 or 600-level offered by any academic unit at McGill or another Montreal university, with the approval of the School, if they help students to develop an in-depth knowledge of one or more subject areas in the field of planning. Choices usually include courses in real-estate analysis, urban geography, sociology, anthropology, law, politics, and environmental science. Students must confirm prior to registration that the selected course(s) can be counted toward the M.U.P. degree.

12.8.7 Master of Urban Planning (M.U.P.) Urban Planning (Non-Thesis): Urban Development and Urban Design (60 credits)

The concentration in Urban Development and Urban Design aims to produce graduates who are skilled in analysis and design for development in existing (sub)urban landscapes and urbanizing contexts, whether in North America or elsewhere. A series of courses on urban design, real estate, the politics of development, and urban governance enhance the core curriculum of the professionally-accredited M.U.P. program. Additional courses address innovative approaches to urban development, contemporary urban form, community-based design, globalization and development, and the adaptive redesign of suburban contexts, in addition to enduring topics such as housing, public space, cultural landscapes, and environmental planning. Students seeking to specialize in Urban Development and Urban Design apply at the end of their first year of study; admission into the concentration is based on performance in the first year of study and demonstration of spatial literacy, numeric competency, skills in graphic communication, and understanding of complex development processes.

Required Courses (45 credits)

URBP 553	(3)	Urban Governance
URBP 609	(1)	Planning Graphics 1
URBP 610	(1)	Planning Graphics 2
URBP 611	(1)	Planning Graphics 3
URBP 612	(3)	History and Theory of Planning
URBP 622	(6)	Planning Studio 1
URBP 623	(6)	Planning Studio 2
URBP 624	(6)	Planning Studio 3
URBP 628	(0)	Practical Experience
URBP 630	(3)	Supervised Research Project 1
URBP 631	(3)	Supervised Research Project 2
URBP 632	(6)	Supervised Research Project 3
URBP 635	(3)	Planning Law
URBP 640	(1)	Introduction to Planning Statistics
URBP 641	(1)	Reading the Urban Landscape
URBP 642	(1)	Introduction to Planning Data

Complementary Courses (15 credits)

A minimum of 9 credits are selected from Group B; the remaining credits can be selected from Group B or Group C as indicated below.

Group A (1 to 3 credits)

1-3 credits from the following:

URBP 505	(3)	Geographic Information Systems
URBP 643	(1)	Introduction to Geographic Information Systems

Group B (9 to 14 credits)

(9-14 credits)

At least 9 credits (three courses) from the following:

URBP 555	(3)	Real Estate and Planning
URBP 557	(3)	Rethinking Zoning
URBP 604	(3)	Urban Design Seminar
URBP 620	(4)	Transport Economics
URBP 629	(3)	Planning Theory and Practice in a Globalizing World
URBP 651	(3)	Redesigning Suburban Space
URBP 656	(3)	Urban Innovation and Creativity

Group C (0-5 credits)

0-5 credits from the following or other 500 or 600 level courses (see note below):

ARCH 515	(3)	Sustainable Design
GEOG 525	(3)	Asian Cities in the 21st Century
URBP 501	(2)	Principles and Practice 1
URBP 503	(3)	Public Transport: Planning and Operations
URBP 504	(3)	Planning for Active Transportation
URBP 506	(3)	Environmental Policy and Planning
URBP 514	(4)	Community Design Workshop
URBP 530	(3)	Urban Infrastructure and Services in International Context
URBP 541	(1)	Selected Topics in Planning
URBP 542	(1)	Selected Topics in Visual Analysis
URBP 543	(3)	Special Topics
URBP 556	(3)	Urban Economy: A Spatial Perspective
URBP 607	(3)	Reading Course: Urban Planning
URBP 616	(3)	Selected Topics 1
URBP 617	(3)	Selected Topics 2
URBP 618	(3)	Selected Topics 3
URBP 619	(4)	Land Use and Transport Planning
URBP 625	(2)	Principles and Practice 2
URBP 626	(2)	Principles and Practice 3
URBP 644	(1)	Multivariate Statistics
URBP 645	(1)	Social Research Methods 1
URBP 646	(1)	Social Research Methods 2
URBP 647	(1)	Selected Methods in Planning 1
URBP 648	(1)	Selected Methods in Planning 2

URBP 649 (1) Visual and Spatial Methods

Students may also take courses at the 500 or 600 level in any academic unit at McGill or at another Montreal university, subject to the approval of the School.

12.8.8 Doctor of Philosophy (Ph.D.) Urban Planning, Policy and Design

The Doctor of Philosophy in Urban Planning, Policy and Design aims to prepare students for interdisciplinary research and teaching on the management of urban development as well as for leadership in the design and evaluation of urban policies and plans for cities in North America and the world. The program will focus on five identified areas of urban planning (land use planning and urban design; environmental planning; transportation planning; international development planning; real estate and economic development). Students are expected to spend the first two years of study taking courses, preparing for their comprehensive examination and writing their dissertation proposal. The remaining two (or more) years are spent conducting research and writing a thesis.

Required Courses (9 credits)

Every student must take courses worth at least 18 credits. Only one reading course can be included in this minimum requirement. The Advisory Committee may raise the requirement up to 24 credits (up to 36 credits for students entering as Ph.D. 1) in order to meet the specific needs of the student. With approval of their committee, students may elect to take a larger number of courses than is required, but in no case will the number of credits exceed thirty unless the student enters the program in Ph.D.1.

URBP 612	(3)	History and Theory of Planning
URBP 701	(0)	Doctoral Comprehensive Examination
URBP 703	(3)	Doctoral Research Seminar 1
URBP 704	(3)	Doctoral Research Seminar 2
URBP 709	(0)	Doctoral Research Proposal

Complementary Courses (6 credits)

3 credits in advanced research methods at the 600 level or higher. It may be taken in any academic unit at McGill or another university, subject to the approval of the Graduate Program or School Director.

3 credits in advanced theory at the 600 level or higher. It may be taken at McGill or at another university and must be approved by the Graduate Program or School Director.

Elective Courses (3 credits)

Minimum 3 credits at the 500 level or higher, or more if the Advisory Committee so decides.

These credits may be taken in any academic unit at McGill or at another university, subject to the approval of the Advisory Committee.

The Advisory Committee may require that the number of electives be increased to improve the student's preparation in certain areas. Other courses, at the 500 level or higher, may be added with the approval of the Advisory Committee. In general, students will be asked to limit their elective coursework to 9 credits. In no case will they be allowed to take more than 15 credits in elective courses.

Up to two reading courses may be taken and only one may be included in the minimum 18 credits of course work. A reading course is taken when no appropriate course is available and is (at least) equivalent to a 3-credit course in terms of work load. Procedures for reading courses are outlined in the Reading Course guidelines.

