



**Faculty of Engineering, including the Schools of  
Architecture and Urban Planning (Graduate)  
Programs, Courses and University Regulations  
2012-2013**



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**Note: Throughout this publication, "you" refers to students newly admitted, readmitted or returning to McGill.**

*Publication Information*

Published by

**Enrolment Services**

McGill University  
3415 McTavish Street  
Montreal, Quebec, H3A 0C8  
Canada

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## 1 Dean's Welcome

To Graduate Students and Postdoctoral Fellows:

I am extremely pleased to welcome you to McGill University. Our world-class scholarly community includes over 250 doctoral and master's degree programs, and is recognized for excellence across the full range of academic disciplines and professions. Graduate and Postdoctoral Studies (GPS) collaborates with the Faculties and other administrative and academic units to provide strategic leadership and vision for graduate teaching and research across the University. GPS also oversees the admission and registration of graduate students, disbursing graduate fellowships, supporting postdoctoral fellows, and facilitating the graduation process, including the examination of theses. GPS has partnered with Enrolment Services to offer streamlined services in a one-stop location at [Service Point](#).

McGill is a student-centred research institution that places singular importance upon the quality of graduate education and postdoctoral training. As Associate Provost (Graduate Education), as well as Dean of Graduate and Postdoctoral Studies, I work closely with the faculties, central administration, graduate students, professors, researchers, and postdoctoral fellows to provide a supportive, stimulating, and enriching academic environment for all graduate students and postdoctoral fellows.

McGill is ranked as one of Canada's most intensive research universities and among the world's top 25. We recognize that these successes come not only from our outstanding faculty members, but also from the quality of our graduate students and postdoctoral fellows—a community into which we are very happy to welcome you.

I invite you to join us in advancing this heritage of excellence at McGill.

*Martin Kreiswirth, Ph.D.*

*Associate Provost (Graduate Education)*

*Dean, Graduate and Postdoctoral Studies*

## 2 Graduate and Postdoctoral Studies

### 2.1 Administrative Officers

#### Administrative Officers

Martin Kreiswirth; B.A.(Hamilton), M.A.(Chic.), Ph.D.(Tor.)

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**Associate Dean (Graduate and Postdoctoral Studies)**

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**Senior Adviser to the Associate Provost / Dean (Graduate and Postdoctoral Studies) (on leave)**

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### 2.2 Location

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Website: [www.mcgill.ca/gps](http://www.mcgill.ca/gps)



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

### 2.3 General Statement Concerning Higher Degrees

Graduate and Postdoctoral Studies (GPS) oversees all programs leading to graduate diplomas, certificates, and higher degrees, with the exception of some programs in the School of Continuing Studies. It is responsible for admission policies, the supervision of graduate students' work, and for recommending to Senate those who may receive the degrees, diplomas, and certificates.

## 3 Important Dates 2012–2013

For all dates relating to the academic year, consult [www.mcgill.ca/importantdates](http://www.mcgill.ca/importantdates).

## 4 Graduate Studies at a Glance

### 4.1 Graduate and Postdoctoral Degrees Offered by Faculty

McGill University offers graduate and postdoctoral programs in the following units (organized by their administering home faculty):

Faculty of Agricultural and Environmental Sciences	Degrees Available
: <i>Agricultural Economics</i>	M.Sc.
: <i>Animal Science</i>	M.Sc., M.Sc.A., Ph.D.
: <i>Bioresource Engineering</i>	M.Sc., M.Sc.A., Ph.D., Graduate Certificate
: <i>Biotechnology</i>	M.Sc.A., Graduate Certificate
: <i>Dietetics and Human Nutrition</i>	M.Sc., M.Sc.A., Ph.D., Graduate Diploma
: <i>Food Science and Agricultural Chemistry</i>	M.Sc., Ph.D.
: <i>Natural Resource Sciences</i>	M.Sc., Ph.D.
: <i>Parasitology</i>	M.Sc., Ph.D.
: <i>Plant Science</i>	M.Sc., M.Sc.A., Ph.D., Graduate Certificate
Faculty of Arts	Degrees Available
: <i>Anthropology</i>	M.A., Ph.D.
: <i>Art History</i>	M.A., Ph.D.
Classics – see : <i>History and Classical Studies</i>	N/A
: <i>Communication Studies</i>	M.A., Ph.D.
: <i>East Asian Studies</i>	M.A., Ph.D.
: <i>Economics</i>	M.A., Ph.D.
: <i>English</i>	M.A., Ph.D.
: <i>French Language and Literature</i>	M.A., Ph.D.
: <i>Geography</i>	M.A., Ph.D.
: <i>History and Classical Studies</i>	M.A., Ph.D.
: <i>Institute for the Study of International Development</i>	N/A
: <i>Islamic Studies</i>	M.A., Ph.D.





Degree		Prerequisites
Master of Arts	M.A.	Bachelor of Arts in the subject selected for graduate work. See appropriate unit.
Master of Architecture	M.Arch.	Professional degree – McGill B.Sc.(Arch.) degree, or equivalent. Post-professional degree – an M.Arch. (professional degree) or equivalent professional degree.
Master of Business Administration	M.B.A.	An undergraduate degree from an approved university. See : <a href="#">M.B.A. Program</a> .
Master of Business Administration with integrated Bachelor of Civil Law / Bachelor of Laws	M.B.A. with B.C.L./LL.B.	See : <a href="#">M.B.A. Program</a> .
Master of Business Administration with Doctor of Medicine / Master of Surgery	M.B.A. with M.D.,C.M.	See : <a href="#">M.B.A. Program</a> .
Master of Education	M.Ed.	Bachelor's degree with specialization related to the subject chosen for graduate work, plus a Permanent Quebec Teaching Diploma or its equivalent for some of the above degrees. See appropriate department.
Master of Engineering	M.Eng.	Bachelor of Engineering or equivalent, with specialization appropriate for the subject selected for graduate study. See appropriate department.  An acceptable degree in Law or equivalent qualifications. See : <a href="#">Law Admission Requirements and Application Procedures</a>









<b>Program Areas</b>	<b>Thesis/Non-Thesis</b>	<b>Options</b>
Food Science and Agricultural Chemistry	Thesis, Non-Thesis	Food Safety (Non-Thesis)
Genetic Counselling	Non-Thesis	N/A
Geography	Thesis	Environment, Neotropical Environment
Human Genetics	Thesis	Bioethics, Bioinformatics
Human Nutrition	Thesis	N/A
Kinesiology and Physical Education	Thesis, Non-Thesis	N/A
Mathematics and Statistics	Thesis, Non-Thesis	Bioinformatics, Computational Science and Engineering
Mechanical Engineering	Thesis	N/A
Medical Radiation Physics	Thesis	N/A
Microbiology	Thesis	Environment
Microbiology and Immunology	Thesis	N/A
Mining and Materials Engineering	Thesis	N/A
Neuroscience	Thesis	N/A
Otolaryngology	Thesis	N/A
Parasitology	Thesis	Bioinformatics, Environment
Pathology	Thesis	N/A
Pharmacology	Thesis	Chemical Biology
Physics	Thesis	N/A
Physiology	Thesis	Bioinformatics
Plant Science	Thesis	Bioinformatics, Environment, Neotropical Environment
Psychiatry	Thesis	N/A
Psychology	Thesis	N/A
Public Health	Non-Thesis	Environment
Rehabilitation Sciences	Thesis, Non-Thesis	N/A
Renewable Resources	Thesis, Non-Thesis	Environment, Neotropical Environment (Thesis) Environmental Assessment (Non-Thesis)

**Master of Science, A**

<b>Program</b>	<b>Thesis/Non-Thesis</b>	<b>Options</b>
Occupational Therapy	Non-Thesis	N/A
Physical Therapy	Non-Thesis	N/A
Plant Science	Non-Thesis	N/A

Programs leading to the degree of Doctor of Philosophy are offered in the following areas:

<b>Program</b>	<b>Options</b>	<b>Offered by Faculty/School</b>
Animal Science	Bioinformatics	Faculty of Agricultural and Environmental Sciences
Anthropology	Neotropical Environment	Faculty of Arts
Architecture	N/A	Faculty of Engineering
Art History	Gender and Women's Studies	Faculty of Arts
Atmospheric and Oceanic Sciences	N/A	Faculty of Science
Biochemistry	Bioinformatics, Chemical Biology	Faculty of Medicine
Biology	Bioinformatics, Developmental Biology, Environment, Neotropical Environment	Faculty of Science
Biomedical Engineering	Bioinformatics	Faculty of Medicine
Bioresource Engineering	Environment, Neotropical Environment	Faculty of Agricultural and Environmental Sciences
Biostatistics	N/A	Faculty of Medicine
Cell Biology	N/A	Faculty of Medicine
Chemical Engineering	N/A	Faculty of Engineering
Chemistry	Chemical Biology	Faculty of Science
Civil Engineering	N/A	Faculty of Engineering
Classics	N/A	Faculty of Arts
Communication Sciences and Disorders	Language Acquisition	Faculty of Medicine
Communication Studies	Gender and Women's Studies	Faculty of Arts
Computer Science	Bioinformatics	Faculty of Science
Counselling Psychology	N/A	Faculty of Education
Earth and Planetary Sciences	Environment	Faculty of Science
Economics	N/A	Faculty of Arts
Educational Psychology	N/A	Faculty of Education
Educational Studies	Gender and Women's Studies, Language Acquisition	Faculty of Education
Electrical Engineering	N/A	Faculty of Engineering
English	N/A	Faculty of Arts
Entomology	Environment, Neotropical Environment	Faculty of Agricultural and Environmental Sciences
Epidemiology	N/A	Faculty of Medicine
Experimental Medicine	Environment	Faculty of Medicine

Program	Options	Offered by Faculty/School
Islamic Studies	Gender and Women's Studies	Faculty of Arts
Linguistics	Language Acquisition	Faculty of Arts
Management	N/A	Desautels Faculty of Management
Mathematics and Statistics	Bioinformatics	Faculty of Arts, Faculty of Science
Mechanical Engineering	N/A	Faculty of Engineering
Microbiology	N/A	Faculty of Agricultural and Environmental Sciences
Microbiology and Immunology	Bioinformatics, Environment	Faculty of Medicine
Mining and Materials Engineering	N/A	Faculty of Engineering
Music	(Composition, Music Education, Musicology, Music Technology, Sound Recording, Theory), Gender and Women's Studies	Schulich School of Music
Neuroscience	N/A	Faculty of Medicine
Nursing	Psychosocial Oncology	Ingram School of Nursing
Occupational Health	N/A	Faculty of Medicine
Parasitology	Bioinformatics, Environment	Faculty of Agricultural and Environmental Sciences
Pathology	N/A	Faculty of Medicine
Pharmacology	Chemical Biology	Faculty of Medicine
Philosophy	Environment, Gender and Women's Studies	Faculty of Arts
Physics	N/A	Faculty of Science
Physiology	Bioinformatics	Faculty of Medicine
Plant Science	Bioinformatics, Environment, Neotropical Environment	Faculty of Agricultural and Environmental Sciences
Political Science	Gender and Women's Studies	Faculty of Arts
Psychology	Language Acquisition, Psychosocial Oncology	Faculty of Arts, Faculty of Science
Rehabilitation Science	N/A	School of Physical and Occupational Therapy
Religious Studies	Gender and Women's Studies	Faculty of Religious Studies
Renewable Resources	Environment, Neotropical Environment	Faculty of Agricultural and Environmental Sciences
Russian	N/A	Faculty of Arts
School/Applied Child Psychology	N/A	Faculty of Education
Social Work	N/A	Faculty of Arts
Sociology	Environment, Gender and Women's Studies	Faculty of Arts

#### Joint Doctor of Philosophy Degrees

The following joint Ph.D. programs are offered:

- Nursing (McGill / Université de Montréal)
- Management (McGill / Concordia / H.E.C. / UQAM)
- Social Work (McGill / Université de Montréal)

#### Ad Hoc Doctor of Philosophy Degrees (Ph.D. (Ad Hoc))

Several departments offer the possibility of directly entering a Ph.D. program on an *ad hoc* basis, or, with the permission of the supervisor and the approval of the Graduate Program Director, exceptional students may transfer from the master's program to the *ad hoc* Ph.D. program.

Program	Options	Offered by Faculty/School
East Asian Studies	N/A	Faculty of Arts
Italian Studies	N/A	Faculty of Arts
Kinesiology and Physical Education	N/A	Faculty of Education



- The following master's programs have a minimum residence requirement of **three full-time terms**: M.Arch, M.A., M.Eng., LL.M., M.Mus. (**except** M.Mus. in Sound Recording), M.Sc., M.S.W., M.Sc.A. (**except** M.Sc.A. in Communication Sciences and Disorders).
- The following master's programs have a **minimum** residence requirement of **four full-time terms**: M.L.I.S.; M.Mus. in Sound Recording; M.U.P.; M.A. (60 credits – Counselling Psychology – thesis; 78 credits – Educational Psychology); M.A. Teaching and Learning – Non-Thesis; M.Sc.A. in Communication Sciences and Disorders; S.T.M., Religious Studies.
- The residence requirement for the master's program in Education (M.Ed.); Library and Information Studies (M.L.I.S.); Management (M.B.A.); Religious Studies (S.T.M.); M.A. Counselling Psychology – Non-Thesis; M.A. Teaching and Learning – Non-Thesis; M.Sc. in Public Health – Non-Thesis; M.Sc.A. Nursing; M.Sc.A. Occupational Therapy; M.Sc.A. Physical Therapy; and students in part-time programs is determined on a per course basis. Residence requirements are fulfilled when students complete all course requirements in their respective programs.
- For master's programs structure 81.0693 636.58 Tmcpsych/F1 8.1 Tf( 0 P )Tj/F4 8 0 P







See [www.mcgill.ca/gradapplicants/apply/prepare/requirements/international-degree-equivalency](http://www.mcgill.ca/gradapplicants/apply/prepare/requirements/international-degree-equivalency) for information on grade equivalencies and degree requirements from countries in Europe and around the world. These equivalencies and requirements are provided for information only and are subject to change without notice.

Admission to graduate programs at McGill is highly competitive and the final decision rests with the Graduate Admissions Committee. Admission decisions are not subject to appeal or reconsideration.

**Revision, October 2012. End of revision.**

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## 6.3 Application Procedures (for All Admissions Starting Summer 2013)

**Revision, October 2012. Start of revision.**

### Application Checklist

All supplemental application materials and supporting documents must be uploaded directly to the McGill admissions processing system. See [www.mcgill.ca/gradapplicants/apply/submitting-your-documents](http://www.mcgill.ca/gradapplicants/apply/submitting-your-documents) for information and instructions.

- 1. Online Application for Admission form:** [www.mcgill.ca/gradapplicants/apply/ready](http://www.mcgill.ca/gradapplicants/apply/ready).
- 2. Application fee:** \$100 for each form you submit (you may indicate two programs on each form), payable by credit card when you submit the form. Some programs may charge additional fees. If applicable these will be automatically charged when you submit the application form.
- 3. Transcripts:** your complete record of study from each university-level institution you have attended to date. Uploaded copies will be considered as unofficial; final, official copies will be required once you are offered admission.
- 4. Reference letters:** on the application form you must provide the names and email addresses of at least two professors who are familiar with your academic work. McGill will contact these referees and invite them to upload references on your behalf. N.B. some departments require more than two referees; please consult *Admission Requirements and Application Procedures* for each department at [www.mcgill.ca/gradapplicants/programs](http://www.mcgill.ca/gradapplicants/programs).
- 5. TOEFL/IELTS, GRE, GMAT results:** when registering for the test please ensure that you request that results be sent directly to McGill University. McGill will then receive the results electronically, directly from the testing agency.

For detailed information regarding additional documents that may be required by certain departments, please consult *Admission Requirements and Application Procedures* for each department at [www.mcgill.ca/gradapplicants/programs](http://www.mcgill.ca/gradapplicants/programs).

### 6.3.1 Document Checklist Terms

The following terms appear on the Document Checklist and are items or documents that you may be required to upload as part of your application for admission. Please ensure that your use of certain terms conforms to the following definitions:

**Audition:** a trial performance where a performer demonstrates their suitability or skill.

**Curriculum Vitae:** an overview of the applicant's experience and other qualifications, including employment, academic credentials, publications, contributions, and significant achievements.

**GMAT:** Graduate Management Aptitude Test (see [section 6.4: Admission Tests](#))

**GRE:** Graduate Records Examination (see [section 6.4: Admission Tests](#))

**Interview:** a conversation between the applicant and a McGill representative, using a structured, standardized approach to allow for comparison and analysis of responses from all applicants interviewed; in person, via telephone, Skype, etc.

**Personal Statement:** an essay in which the applicant describes their reasons for applying to graduate studies and indicating qualifications, qualities, or circumstances the applicant feels to be significant; usually provides information about educational and professional goals and discusses the applicant's interest in the desired field of study.

**Portfolio:** a collection of the applicant's best work to date, selected by them, and intended to show their mastery of a given style or variety of styles; different samples of their artistic work.

**Recording:** an unedited recording (audio or video) of the applicant performing at least two contrasting pieces; minimum 20 minutes.

**Research Proposal:** a detailed description of the proposed program of research, including proposed Thesis Supervisor(s); describes the research background, significance, methodology, and references; may include expected results; may include a detailed curriculum vitae.

**TOEFL:** Test of English as a Foreign Language (see [section 6.5: Competency in English](#))

**Writing Sample:** a recent sample of the applicant's written work, on applicant's written work.

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## 6.4 Admission Tests

**Revision, October 2012. Start of revision.**

### **Graduate Record Examination (GRE)**

The Graduate Record Examination (GRE) (Educational Testing Service, Princeton, NJ 08540) consists of a relatively advanced test in the candidates' specialty, and a general test of their attainments in several basic fields of knowledge for which no special preparation is required or recommended. It is offered at many centres, including Montreal, several times a year; the entire examination takes about eight hours, and there is a registration fee. Refer to [www.ets.org/gre](http://www.ets.org/gre)

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## 6.6 Admission to a Qualifying Program

Some applicants whose academic degrees and Standing entitle them to serious consideration for admission to graduate studies, but who are considered inadequately prepared in the subject selected may be admitted to a Qualifying Program for a master's. The undergraduate-level courses to be taken in a Qualifying Program will be prescribed by the department concerned.

Qualifying students are registered in graduate studies, **but not as candidates for a degree**. Only one Qualifying year (i.e., two full-time terms) is permitted.

In all cases, after the completion of a Qualifying year or term, an applicant interested in commencing a degree program must apply for admission by the Dates for Guaranteed Consideration. Successful completion of the work in the Qualifying Program (B- in all courses) does not automatically entitle the student to proceed to

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## **6.11 Deferral of Admission**

Under exceptional circumstances, an admission for a particular semester can be considered for a deferral. This can be considered only if the student has not registered. If the student has already registered, no deferral can be granted. The student must withdraw from the University and apply for admission to a later term.

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## **7 Fellowships, Awards, and Assistantships**

Graduate and Postdoctoral Studies  
(Fellowships and Awards Section)  
James Administration Building, Room 400  
845 Sherbrooke Street W

Postdocs of policies, procedures, and privileges (e.g., orientation sessions, handbooks, etc.), as well as mechanisms for addressing complaints. Academic units should ensure that their policies, procedures and privileges are consistent with these guidelines and the Charter of Students' Rights. For their part, Postdocs are responsible for informing themselves of policies, procedures, and privileges.

**1. Definition and Status**

- i. Postdoctoral status will be recognized by the University in accordance with Quebec provincial regulations. Persons may only be registered with postdoctoral status for a period of up to five years from the date they were aw

- 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 responsibilities of the department are:
  - to verify the Postdoc's eligibility period for registration;
  - to provide Postdocs with departmental policy and procedures that pertain to them;
  - to oversee the registration and appointment of Postdocs;
  - to assign departmental personnel (e.g., Postdoc coordinator and Graduate Program Director) the responsibility for Postdocs;
  - to oversee and sign off on the Letter of

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. GPS has prepared 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. The document is available at [www.mcgill.ca/gps/students/progress/leave-vacation](http://www.mcgill.ca/gps/students/progress/leave-vacation) under “Information on the Funding Council Leave Policies for Graduate Students and Postdoctoral Fellows.”

## 8.5 Postdoctoral Research Trainees

### Eligibility

If your situation does not conform to the *Quebec Ministère de l'Éducation, du Loisir et du Sport* (MELS) definition of 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—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 the degree/certification has not yet been awarded. The individual will subsequently be eligible for registration as a Postdoctoral Fellow.

**Category 2:** An individual who is not eligible for Postdoctoral Registration according to the MELS 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. The individual wishes to conduct the research stage or elective component of his/her program of study at McGill University under the supervision of a McGill professor. The individual will be engaged in full-time research with well-defined objectives, responsibilities, and methods of reporting. The application must be accompanied by a letter of permission from the 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/diploma;
- 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 *Programs, Courses and University Regulations > University Regulations and 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
- Health and Parental/Familial Leave of Absence Policy
- Failure Policy
- Guideline on Hours of Work







***section 11.1.8: Master of Architecture (M.Arch.); Post-professional (Non-Thesis) — Cultural Mediations and Technology (45 credits)***

capitalizes on the expertise of the architect-researcher to move freely between art and science, between content-based and empirical research, and to facilitate robust interdisciplinary teams of engineers, technologists, media artists, and social scientists to understand, explain, and create today's built environment. It is suited for those with a professional trajectory interested in understanding the impact of technologies on creative processes, as well as for those candidates who aim to pursue Ph.D.-level studies and research. The concentration offers a unique intertwining of intense theoretical and historical investigation with empirically based project research that culminates in a Project Report.

***section 11.1.9: Master of Architecture (M.Arch.); Post-professional (Non-Thesis) — Urban Design and Housing (45 credits)***

Urban Design and Housing at McGill is comprised of Urban Design, Affordables Homes, and Minimum Cost Housing. Urban Design emphasizes the acquisition of skills pertaining to the analysis and design of the built environment, whether in existing urban districts or in newly built areas. Our Urban Design component has a strong commitment to reflexive practice, to conducting research that can inform and improve design quality, to involving those who are affected by city design decisions, and to promoting a long-range perspective on the consequences of actions that shape the urban environment. The Housing component is comprised, historically, of two streams: Affordable Homes and Minimum Cost Housing. Affordable Homes focuses on the knowledge and design skills necessary to understand the relationship between the architect and the external forces that influence the production of affordable housing in North America. Minimum Cost Housing addresses problems and devises philosophies of shelter in developing countries. The general aim is to provide professionals with the knowledge and imagination that they will need to engage individuals and the community in meaningful debates on the nature of housing and urban space and generate creative and sustainable solutions for cities. This option is particularly attractive to students who wish to pursue careers in public agencies and private consulting firms where a credential in Urban Design is important.

**Ph.D. in Architecture**

***section 11.1.10: Doctor of Philosophy (Ph.D.); Architecture***

Our Ph.D. is a research-based degree, with a primary requirement of an original thesis that makes a substantial contribution to knowledge in the field of architecture. The minimum residence requirement is three years. Every year only a few students are accepted into the Ph.D. program, which means that all incoming Ph.D. candidates compete for a place as Ph.D. 2 students. The most qualified students enter into their first research seminar in September.

Doctoral candidates must have their thesis proposal (ARCH 700) approved by their adviser before embarking on their research. A Thesis Advisory Committee is then struck and is responsible for monitoring the student's research. For course ARCH 701, a comprehensive research proposal is required, as well as a demonstration of broad knowledge in the field. Candidates will submit two further reports in formal meetings with the Advisory Committee, who will review the work in progress (ARCH 702 and ARCH 703). The final meeting takes place after the Committee has reviewed the full draft of the dissertation. If approvM.A.02 Tm(Our Ph.21881.5mreme36408.12sed derch657 Tj1 0 0 1 233881.imreme36408.12 to mo)Tj1 0 02..5mreme36408.12alnpro000 anship



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ARCH 550	(3)	Urban Planning and Development
ARCH 672	(6)	Architectural Design 1
ARCH 673	(6)	Architectural Design 2
ARCH 674	(3)	Professional Practice 1
ARCH 677	(6)	Architectural Design 3
ARCH 678	(3)	Advanced Construction
ARCH 680	(3)	Field Sketching

**Complementar**

## Elective Courses

0-6 credits

A maximum of 6 credits may be completed outside the School of Architecture (500- or 600-level electives).

### 11.1.6 Master of Architecture (M.Arch.); Professional (Non-Thesis) — Design Studio-Directed Research (60 credits)

The Directed Research concentration is a four-term, 60-credit option, which is a modified version of the regular three-term 45-credit program. This is a self-directed project-based investigation that allows for a transition to a Ph.D. program through an intensive research component.

Candidates within this concentration option are assigned a faculty adviser and engage in project-based directed research. Complementary and elective courses are approved in consultation with the adviser.

#### Required Courses (40 credits)

ARCH 550	(3)	Urban Planning and Development
ARCH 626	(4)	Critical Design Strategies
ARCH 672	(6)	Architectural Design 1
ARCH 673	(6)	Architectural Design 2
ARCH 674	(3)	Professional Practice 1
ARCH 678	(3)	Advanced Construction
ARCH 682	(6)	Directed Research Project 1
ARCH 683	(9)	Directed Research Project 2

#### Complementary Courses

(12-20 credits)

Group A:

6 credits chosen from the following courses:

ARCH 525	(3)	Seminar on Analysis and Theory
ARCH 526	(3)	Philosophy of Structure
ARCH 527	(3)	Civic Design
ARCH 528	(3)	History of Housing
ARCH 529	(3)	Housing Theory
ARCH 531	(3)	Architectural Intentions Vitruvius - Renaissance
ARCH 532	(3)	Origins of Modern Architecture
ARCH 533	(3)	New Approaches to Architectural History
ARCH 534	(3)	Architectural Archives
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 554	(2)	Mechanical Services
ARCH 561	(3)	Affordable Housing Seminar 1
ARCH 562	(3)	Affordable Housing Seminar 2
ARCH 564	(3)	Design for Development
ARCH 566	(3)	Cultural Landscapes Seminar
ARCH 602	(4)	Urban Design Seminar 1
ARCH 604	(4)	Urban Design Seminar 2
ARCH 622	(3)	Critical Writing
ARCH 627	(4)	Research Methods for Architects
ARCH 679	(3)	Writing in Architecture
ARCH 680	(3)	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

Note: Courses taken are to be used to fulfil one group only.

Unless otherwise indicated, the above courses are restricted to students in the professional area.

### **Elective Courses**

ARCH 622	(3)	Critical Writing
ARCH 623	(3)	Project Preparation
	(8)	Architectural History Seminar 1



ARCH 521	(3)	Structure of Cities
ARCH 523	(3)	Significant Texts and Buildings
ARCH 526	(3)	Philosophy of Structure
ARCH 527	(3)	Civic Design
ARCH 528	(3)	History of Housing
ARCH 529	(3)	Housing Theory
ARCH 531	(3)	Architectural Intentions Vitruvius - Renaissance
ARCH 532	(3)	Origins of Modern Architecture
ARCH 533	(3)	New Approaches to Architectural History
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 550	(3)	Urban Planning and Development
ARCH 561	(3)	Affordable Housing Seminar 1
ARCH 562	(3)	Affordable Housing Seminar 2
ARCH 564	(3)	Design for Development
ARCH 566	(3)	Cultural Landscapes Seminar
ARCH 622	(3)	Critical Writing
ARCH 680	(3)	Field Sketching
URBP 501	(2)	Principles and Practice 1
URBP 504	(3)	Planning for Active Transportation
URBP 505	(3)	Geographic Information Systems
URBP 506	(3)	Environmental Policy and Planning
URBP 530	(3)	Urban Environmental Planning
URBP 536	(1)	Transportation Seminar 1
URBP 537	(1)	Transportation Seminar 2
URBP 538	(1)	Transportation Seminar 3
URBP 616	(3)	Selected Topics 1
URBP 617	(3)	Selected Topics 2
URBP 618	(3)	Selected Topics 3
URBP 619	(3)	Land Use and Transportation Planning
URBP 625	(2)	Principles and Practice 2
URBP 626	(2)	Principles and Practice 3
URBP 629	(3)	Cities in a Globalizing World

### 11.1.10 Doctor of Philosophy (Ph.D.); Architecture

#### 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

ARCH 700	(0)	Dissertation Proposal
ARCH 701	(0)	Comprehensive Oral Examination
ARCH 702	(0)	Progress Report 1
ARCH 703	(0)	Progress Report 2

---

## 11.2 Chemical Engineering

### 11.2.1 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: [info.chemeng@mcgill.ca](mailto:info.chemeng@mcgill.ca)

Website: [www.mcgill.ca/chemeng](http://www.mcgill.ca/chemeng)

### 11.2.2 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, 17 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, FQRNTTj1 0 0 1 308.287 .693 571.321 Tmrtmenscrib(e.gelo 1 70.52 678.42.027831 922.1)T

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 Kelvins (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 Laboratory, which forms one of the founding groups of the Plasma-Québec Centre.

#### ***section 11.2.5: Master of Engineering (M.Eng.); 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 11.2.6: 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 11.2.7: Master of Engineering (M.Eng.); Chemical Engineering (Non-Thesis) — Environmental Engineering (45 credits)***

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, Metals 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 McGill School of Environment.

#### ***section 11.2.8: 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 arituents uates81 0 0

### 11.2.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: Jan. 15	Fall: Jan. 15	Fall: Jan. 15
Winter: Oct. 15	Winter: Sept. 15	Winter: Same as Canadian/International
Summer: Jan. 15	Summer: Jan. 15	Summer: Jan. 15

Dates for Guaranteed Consideration differ for International and Canadian (and Permanent Resident) students to allow time to obtain a visa.

**Revision, October 2012. End of revision.**

### 11.2.4 Chemical Engineering Faculty

Chair

### 11.2.5 Master of Engineering (M.Eng.); 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 (2 credits)

CHEE 681	(1)	Laboratory Safety 1
CHEE 682	(1)	Laboratory Safety 2

#### Complementary Courses (12 credits)

3-4 credits of Chemical Engineering courses at the 500, 600, or 700 level.

4 credits from the following:

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

4-5 credits of Chemical Engineering or other Engineering or Science courses at the 500, 600, or 700 level.

### 11.2.6 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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#### Complementar

CHEE 591

(3)

Environmental Bioremediation  
Environmental Engineering Seminar

## 11.2.8 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 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: 8 credits from the list, if taken during the Ph.D. program, can be used to meet the first coursework requirement of 6-8 credits of Chemical Engineering courses.

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## 11.3 Civil Engineering and Applied Mechanics

### 11.3.1 Location

Department of Civil Engineering and Applied Mechanics  
 Macdonald Engineering Building, Room 492  
 817 Sherbrooke Street West  
 Montreal, QC H3A 0C3  
 Canada

Telephone: 514-398-6858  
 Fax: 514-398-7361  
 Email: [gradinfo.civil@mcgill.ca](mailto:gradinfo.civil@mcgill.ca)  
 Website: [www.mcgill.ca/civil](http://www.mcgill.ca/civil)

### 11.3.2 About Civil Engineering and Applied Mechanics

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 and structural mechanics; infrastructure rehabilitation; risk engineering; fluid mechanics and hydraulics; materials engineering; soil behaviour; soil mechanics and foundations; water resources engineering; environmental engineering; and transportation engineering.

**M.Eng. in Ci**



### 11.3.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: Jan. 15	Fall: Jan. 15	Fall: March 15
Winter: Oct. 15	Winter: Sept. 15	Winter: Oct. 15
Summer: Jan. 15	Summer: Jan. 15	Summer: March 15

Revision, October 2012. End of revision.

### 11.3.4 Civil Engineering and Applied Mechanics Faculty

#### Chair

V.T.V. Nguyen

#### Chair of Graduate Program

G. McClure

#### Emeritus Professors

P.J. Harris; B.Sc.(Manit.), M.Eng., Ph.D.(McG.), F.E.I.C., F.C.S.C.E., Eng.

M.S. 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.

S.B. Savage; B.Eng.(McG.), M.S.Eng.(Cal. Tech.), Ph.D.(McG.), F.R.S.C.

#### Professors

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

D. Mitchell; B.A.Sc., M.A.Sc., Ph.D.(Tor.), F.A.C.I., Eng.

V.T.V. Nguyen; B.M.E.(Vietnam), M.C.E.(A.I.T.), D.A.Sc.(Montr.), Eng.

J. Nicell; B.A.Sc., M.A.Sc., Ph.D.(Windsor), P.Eng.

A.P.S. Selvadurai; M.S.(Stan.), Ph.D., D.Sc.(Nott.), F.E.I.C., F.I.M.A., F.C.S.C.E., P.Eng.

S.C. Shrivastava; B.Sc.(Eng.)(Vikram), M.C.E.(Del.), Sc.D.(Col.)

#### Associate Professors

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

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

R. Gehr; B.Sc.(Eng.)(Witw.), M.A.Sc., Ph.D.(Tor.), P.Eng.

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

G. McClure; B.Eng.(Montr.), S.M.C.E.(MIT), Ph.D.(Montr.), Eng.

M.A. Meguid; B.Sc.(Cairo), M.Sc., Ph.D.(W. Ont.), P.Eng.

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

Y. Shao; B.Sc., M.S.(Tongji), Ph.D.(N'western), P.Eng.

#### Assistant Professors

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

N. Eluru; B.Sc.(Indian IT), M.Sc. Ph.D.(Texas-Austin)

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

T. Gleeson; B.Sc.(Vic., BC), M.Sc.(S. Fraser), Ph.D.(Qu.)

M. Hatzopoulou; B.Sc., M.Sc.(Beirut), Ph.D.(Tor.)

**Assistant Professors**

D. Lignos; B.Sc.(Nat. Tech., Athens), M.Sc., Ph.D.(Stan.)

J. Liu; BE/ME(China), ME(Rensselaer Poly.), Ph.D.(Purd.)

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

**Adjunct Professors**

S. Babarutsi, R. Edwards, J. Hadjinicolaou, J. Hawari, A. Keane, Z. Lounis, P. Lundahl, C. Manatakos, T.S. Nguyen, P. Rodrigue, S. Scola, W. Taylor, M. Villeneuve, J. Vrana

**11.3.5 Master of Engineering (M.Eng.); Civil Engineering (Thesis) (45 credits)**

**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)	Masters Research Seminar
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**Complementary Courses (17 credits)**

(minimum 17 credits)

A minimum of five courses at the 500 or 600 level, with at least 8 credits at the 600 level.

**11.3.6 Master of Science (M.Sc.); Civil Engineering (Thesis) (45 credits)**

**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)	Masters Research Seminar
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**Complementary Courses (17 credits)**

A minimum of five courses at the 500 or 600 level, with at least 8 credits at the 600 level.

### **11.3.7 Master of Engineering (M.Eng.); Civil Engineering (Non-Thesis) (45 credits)**

#### **Research Project**

(5-15 credits)

Credit for the project may vary between 5 and 15 credits, 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

#### **Complementary Courses**

(30-40 credits)

A minimum of 30 credits at the 500 or 600 level, with at least 8 credits at the 600 level.

### **11.3.8 Master of Engineering (M.Eng.); Civil Engineering (Non-Thesis) — Environmental Engineering (45 credits)**

**Water pollution engineering:**

CIVE 651	(4)	Theory: Water / Wastewater Treatment
CIVE 652	(4)	Biological Treatment: Wastewaters
CIVE 660	(4)	Chemical and Physical Treatment of Waters

**Air pollution engineering:**

MECH 534	(3)	Air Pollution Engineering
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**Soil and water quality management:**

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

**Environmental impact:**

GEOG 501	(3)	Modelling Environmental Systems
GEOG 551	(3)	Environmental Decisions

**Environmental policy**

URBP 506	(3)	Environmental Policy and Planning
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**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, Religious Studies, Sociology, and McGill School of Environment.

**11.3.9 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.

CIVE 701	(0)	Ph.D. Comprehensive Preliminary Oral Exam
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**Complementary Courses**

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

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**11.4 Electrical and Computer Engineering**

**11.4.1 Location**

Department of Electrical and Computer Engineering  
 McConnell Engineering Building, Room 602  
 3480 University Street  
 Montreal, QC H3A 0E9  
 Canada

Telephone: 514-398-7344  
Fax: 514-398-4470  
Email: [grad.ece@mcgill.ca](mailto:grad.ece@mcgill.ca)  
Website: [www.mcgill.ca/ece](http://www.mcgill.ca/ece)

#### **11.4.2 About Electrical and Computer Engineering**

The Department offers programs of graduate studies leading to a degree of Master of Engineering (thesis or project/non-thesis) or Doctor of Philosophy. The research interests and facilities of the Department are very extensive, involving more than 50 f

*section 11.4.7: Master of Engineering (M.Eng.); Electrical Engineering (Non-Thesis) (47 credits)*

The Master of Engineering degree (project option) involves nine graduate 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. Undertaking nine courses 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 dev

Revision, October 2012. End of revision.

#### 11.4.4 Electrical and Computer Engineering Faculty

**Chair (*Interim*)**

Fabrice Labeau

**Graduate Program Director**

Richard Rose

**Emeritus Professors**

**Associate Professors**

Jeremy R. Cooperstock; A.Sc.(Br. Col.), M.Sc., Ph.D.(Tor.)  
 Mourad El-Gamal; B.Sc.(Cairo), M.Sc.(Nashville), Ph.D.(McG.) (*William Dawson Scholar*)  
 Dennis Giannacopoulos; M.Eng., Ph.D.(McG.)  
 Warren Gross; B.A.Sc.(Wat.), M.A.Sc., Ph.D.(Tor.)  
 Roni Khazaka; M.Eng., Ph.D.(Car.)  
 Fabrice Labeau; M.S., Ph.D.(Louvain)  
 Steve McFee; B.Eng., Ph.D.(McG.)  
 Hannah Michalska; B.Sc., M.Sc.(Warsaw), Ph.D.(Lond.)  
 Milica Popovich; B.Sc.(Colo.), M.Sc., Ph.D.(N'western)  
 Ioannis Psaromiligkos; B.Sc.(Patras), M.Sc., Ph.D.(Buffalo)  
 Richard Rose; B.Sc., M.S.(Ill.), Ph.D.(GIT)  
 Ishiang Shih; M.Eng., Ph.D.(McG.)  
 Zeljko Zilic; B.Eng.(Zagreb), M.Sc., Ph.D.(Tor.)

**Assistant Professors**

François Bouffard; B.Eng., Ph.D.(McG.)  
 Vamsy Chodavarapu; B.Eng.(Osmania), M.S., Ph.D.(NYU)  
 Odile Liboiron-Ladouceur; B.Eng.(McG.), M.Sc., Ph.D.(Col.)  
 Aditya Mahajan, B.Tech.(Indian IT), M.S., Ph.D.(Mich.)  
 Brett Meyer; B.S.(Wisc.), M.S., Ph.D.(Carn. Mell)  
 Zetian Mi; B.A.Sc.(Beijing), M.Sc.(Iowa), Ph.D.(Mich.)  
 Sam Musallam; B.Sc., M.Sc., Ph.D.(Tor.)  
 Michael Rabbat; B.S.(Ill.), M.S.(Rice), Ph.D.(Wisc.)  
 Martin Rochette; B.A., M.Eng., Ph.D.(Laval)  
 Thomas Szkopek; B.A.Sc., M.A.Sc.(Tor.), Ph.D.(Calif.-LA)  
 Mai Vu; M.S., Ph.D.(Stan.)  
 Haibo Zeng; B.E., M.E.(Tsinghua), M.S., Ph.D.(Calif., Berk.)

**Associate Members**

Gregory Dudek, Alan C. Evans, William R. Funnell, Henrietta L. Galiana, Jean Gotman, David Juncker, Robert E. Kearney, Nathaniel J. Quitoriano

**Adjunct Professors**

Ray Bartnikas, Danny Grant, Cedric Guss, Ricardo Izquierdo, Cheng K. Jen, Innocent Kamwa, Irene Leszkowicz, Martin Maier, Shie Mannor, Douglas O'Shaughnessy, Katarzyna Radecka, Robert Sabourin, Joshua David Schwartz, Leszek Szczecinski, Claude Thibeault, Kenneth D. Wagner

**11.4.5 Master of Engineering (M.Eng.); Electrical Engineering (Thesis) (46 credits)**

The M.Eng. Thesis program must be completed on a full-time basis in three years. The following requirements must be met:

**Thesis Courses (28 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 28 credits during the three terms of residency.

**Complementary Courses**

(18 credits minimum)

At least six 500-, 600-, or 700-level courses, normally with a minimum of four ECSE 500- or 600-level courses.\*

\* Under special circumstances, and subject to Departmental approval appro

ATOC 515	(3)	Turbulence in Atmosphere and Oceans
CIVE 514	(3)	Structural Mechanics
CIVE 572	(3)	Computational Hydraulics
CIVE 603	(4)	Structural Dynamics
COMP 557	(3)	Fundamentals of Computer Graphics
COMP 558	(3)	Fundamentals of Computer Vision
COMP 567	(3)	Discrete Optimization 2
COMP 621	(4)	Program Analysis and Transformations
COMP 642	(4)	Numerical Estimation Methods
COMP 767	(4)	Advanced Topics: Applications 2
ECSE 507	(3)	Optimization and Optimal Control
ECSE 532	(3)	Computer Graphics
ECSE 547	(3)	Finite Elements in Electrical Engineering
ECSE 549	(3)	Expert Systems in Electrical Design
MATH 555	(4)	Fluid Dynamics
MATH 560	(4)	Optimization
MATH 761	(4)	Topics in Applied Mathematics 1
MECH 533	(3)	Subsonic Aerodynamics
MECH 537	(3)	High-Speed Aerodynamics
MECH 538	(3)	Unsteady Aerodynamics
MECH 539	(3)	Computational Aerodynamics
MECH 541	(3)	Kinematic Synthesis
MECH 572	(3)	Introduction to Robotics
MECH 573	(3)	Mechanics of Robotic Systems
MECH 576	(3)	Geometry in Mechanics
MECH 577	(3)	Optimum Design
MECH 610	(4)	Fundamentals of Fluid Dynamics
MECH 620	(4)	Advanced Computational Aerodynamics
MECH 632	(4)	Theory of Elasticity
MECH 642	(4)	Advanced Dynamics
MECH 650	(4)	Fundamentals of Heat Transfer
MECH 654	(4)	Compt. Fluid Flow and Heat Transfer

#### 11.4.7 Master of Engineering (M.Eng.); Electrical Engineering (Non-Thesis) (47 credits)

Full-time students must complete the program in three years. A part-time program is possible. The following requirements must be met:

##### Research Project

(11-20 credits)

The credits assigned to the project can vary between 11 and 20 depending on the number of course credits taken from the following courses:

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



- aerodynamics, fluids, and thermal engineering
- mechanics of materials and structures
- dynamics and control
- design and manufacturing
- bioengineering

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

**Aerodynamics, fluids, and thermal engineering**

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.

**Mechanics of materials and structures**

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

**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.

**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.

**Bioengineering**

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

**Programs Offputer**



the Internet-based TOEFL test, with each component score not less than 20 (or 580 on the paper-based test, with a minimum of 4.0 on the “Test of Written English”); or a minimum overall band of 7.0 on the IELTS test.

### 11.5.3.2 Application Procedures

McGill’s online application form for graduate program candidates is available at [www.mcgill.ca/gradapplicants/apply](http://www.mcgill.ca/gradapplicants/apply).

See [section 6.3: Application Procedures \(for All Admissions Starting Summer 2013\)](#) for detailed application procedures.

Please consult [www.mcgill.ca/mecheng/grad/admissions/doc](http://www.mcgill.ca/mecheng/grad/admissions/doc) for further details on required application documents.

#### 11.5.3.2.1 Additional Requirements

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

- two official Referee Reports
- Personal Statement – one page
- an updated list of publications
- list of extra-curricular activities
- Curriculum Vitae

#### 11.5.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: Jan. 15	Fall: Jan. 15	Fall: Jan. 15
Winter: Oct. 15	Winter: Sept. 15	Winter: Same as Canadian/International
Summer: N/A	Summer: N/A	Summer: N/A

Please also consult the Departmental website for the Dates for Guaranteed Consideration: [www.mcgill.ca/mecheng/grad/admissions/date](http://www.mcgill.ca/mecheng/grad/admissions/date).

**Revision, October 2012. End of revision.**

## 11.5.4 Mechanical Engineering Faculty

### Chair

A.K. Misra

### Graduate Program Director

L.G. Mongeau

### Graduate Admissions and Scholarships Director

S. Nadarajah

### Graduate Aerospace Director

P. Hubert

### Graduate MMM Co-Director

V. Thomson

### Emeritus Professors

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

R. Knystautas; B.Eng., M.Eng., Ph.D.(McG.), Ing.

D.F. Mateescu; M.Eng.(Poli. U. Buch.), Ph.D.(Rom. Acad. Sci.), Doctor Honoris Causa(Poli. U. Buch.), A.F.A.I.A.A., F.C.A.S.I.

M.P. Païdoussis; 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*)

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

**Post-Retirement**

G. Bach; B.Sc.(Alta.), M.Sc.(Birm.), Ph.D.(McG.)  
 L. Kops; B.Eng., M.Eng., D.Sc., Eng. (Krakow Tech U.), Ing., F.C.I.R.P., F.A.S.M.E., F.C.S.M.E., M.S.M.E.  
 V. Thomson; B.Sc.(Windsor), Ph.D.(McM.) (*Werner Graupe Professor of Manufacturing Automation*)  
 P.J. Zsombor-Murray; B.Eng., M.Eng., Ph.D.(McG.), Ing., F.C.S.M.E.

**Professors**

M. Amabili; M.Sc.(Ancona), Ph.D.(Bologna), F.A.S.M.E. (*Canada Research Chair*)  
 J. Angeles; B.Sc., M.Sc.(UNAM Mexico), Ph.D.(Stan.), Eng., F.A.S.M.E., F.C.S.M.E., F.R.S.C. (*James McGill Professor*) (*NSERC Design Engineering Chair*)  
 B.R. Baliga; B.Tech.(I.I.T. Kanpur), M.Sc.(Case West.), Ph.D.(Minn.)  
 E. Fried; A.B.(Calif., Berk.), B.S.(Calif. Poly.), M.S., Ph.D.(Calif. Tech.) (*Canada Research Chair*)  
 W.G. Habashi; B.Eng., M.Eng.(McG.), Ph.D.(C'nell), Ing., F.A.S.M.E., F.A.I.A.A., F.C.A.E., F.R.S.C. (*NSERC-J. Armand Bombardier Industrial Research Chair*)  
 G. Haller; M.Sc.(Budapest), Ph.D.(Calif. Tech.) (*Faculty of Engineering Distinguished Professor*)  
 J.H.S. Lee; B.Eng.(McG.), M.Sc.(MIT), Ph.D.(McG.), Ing., F.R.S.C., F.C.A.E.  
 A.K. Misra; B.Tech.(I.I.T., Kgp.), 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*)  
 L. Mongeau; B.Sc., M.Sc.(École Poly., Montr.), Ph.D.(Penn St.), Ing. (*Canada Research Chair*)  
 M. Nahon; B.Sc.(Qu.), M.Sc.(Tor.), Ph.D.(McG.), Ing.

**Associate Professors**

L. Cortelezzi; M.Sc., Ph.D.(Calif. Tech.)  
 D.L. Frost; B.A.Sc.(Br. Col.), M.S., Ph.D.(Calif. Tech.), P.Eng.  
 A.J. Higgins; B.Sc.(Ill.), M.S., Ph.D.(Wash.)  
 P. Hubert; B.Eng., M.A.Sc.(École Poly., Montr.), Ph.D.(Br. Col.), Ing. (*Canada Research Chair*)  
 J Kövecses; M.Sc.(U. Miskolc), Ph.D.(Hung. Acad. Sci.), Ing.  
 T. Lee; M.S.(Portland St.), Ph.D.(Idaho)  
 L. Lessard; B.Eng.(McG.), M.Sc., Ph.D.(Stan.), Ing.  
 R. Mongrain; B.Sc., M.Sc.(Montr.), Ph.D.(École Poly., Montr.), Ing. (*William Dawson Scholar*)  
 L. Mydlarski; B.Sc.(Wat.), Ph.D.(C'nell)  
 S. Nadarajah; B.Sc.(Kansas), M.S., Ph.D.(Stan.)  
 D. Pasini; M.Sc.(Pavia), Ph.D.(Brist.), Ing.  
 P. Radziszewski; B.Sc.(Br. Col.), M.Sc., Ph.D.(Laval), Ing.  
 I. Sharf; B.A.Sc., Ph.D.(Tor.)  
 V. Thomson; B.Sc.(Windsor), Ph.D.(McM.) (*Werner Graupe Professor of Manufacturing Automation*)  
 E.V. Timofeev; M.Sc., Ph.D.(S.T.U. St. Petersburg), Eng., A.F.A.I.A.A.  
 S. Vengallatore; B.Tech.(B.H.U), Ph.D.(MIT) (*Canada Research Chair*)

**Assistant Professors**

F. Barthelat; M.Sc.(Roch.), Ph.D.(N'western)  
 J. M. Bergthorson; B.Sc.(Manit.), M.Sc., Ph.D.(Calif. Tech.), P.Eng.  
 J.R. Forbes; B.Sci.(Wat.), M.Sc., Ph.D.(Tor.)  
 X. Liu; B.Eng., M.Eng.(Harbin), Ph.D.(Tor.)

**Non-Tenure-Track Faculty**

H. Attia, A. Sabih, D. Zorbas

**11.5.5 Master of Engineering (M.Eng.); Mechanical Engineering (Thesis) (45 credits)**

Applicants who hold an undergraduate degree in a non-Engineering discipline – typically the Physical Sciences – may apply for the M.Sc. (Thesis) program, which is governed by the same regulations as the M.Eng. (Thesis) program.

**Thesis Courses (28 credits)**

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

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

**Required Courses**

1 credit:

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

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

**11.5.6 Master of Science (M.Sc.); Mechanical Engineering (Thesis) (45 credits)**

Applicants who hold an undergraduate degree in a non-Engineering discipline – typically the Physical Sciences – may apply for the M.Sc. (Thesis) program, which is governed by the same regulations as the M.Eng. (Thesis) program.

**Thesis Courses (28 credits)**

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

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

**Required Course**

1 credit:

MECH 609	(1)	Seminar
----------	-----	---------

**Complementary Courses (16 credits)**

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

**11.5.7 Master of Engineering (M.Eng.); Mechanical Engineering (Thesis) — Computational Science and Engineering (46 credits)****Thesis Courses (28 credits)**



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

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

**Required Courses (2 credits)**

MECH 609	(1)	Seminar
MECH 669	(1)	Computational Science Engineering Seminar

**Complementary Cour**

MECH 537	(3)	High-Speed Aerodynamics
MECH 538	(3)	Unsteady Aerodynamics
MECH 539	(3)	Computational Aerodynamics
MECH 541	(3)	Kinematic Synthesis
MECH 572	(3)	Introduction to Robotics
MECH 573	(3)	Mechanics of Robotic Systems
MECH 576	(3)	Geometry in Mechanics
MECH 577	(3)	Optimum Design
MECH 610	(4)	Fundamentals of Fluid Dynamics
MECH 620	(4)	Advanced Computational Aerodynamics
MECH 632	(4)	Theory of Elasticity
MECH 642	(4)	Advanced Dynamics
MECH 650	(4)	Fundamentals of Heat Transfer
MECH 654	(4)	Compt. Fluid Flow and Heat Transfer

### 11.5.8 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)	Theory of Elasticity
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 levMECH 654

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.

**11.5.10 Master of Management (M.M.M.); Manufacturing Management (Non-Thesis) (57 credits)**

Note: This program is either a 56- or 57-credit program.

**Required Courses - General Business and Management (11 credits)**

MGCR 651	(4)	Managing Resources
MGCR 652	(4)	Value Creation
MGSC 608	(3)	Data Decisions and Models

**Complementary Courses - General Business and Management (6 credits)**

6 credits from the following:

ACCT 624	(3)	Management Accounting: Planning & Control
INDR 603	(3)	Industrial Relations
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

**Required Courses - Manufacturing and Supply Chain Operations (15 credits)**

MECH 524	(3)	Computer Integrated Manufacturing
MGSC 602	(3)	Strategic Management of Operations
MGSC 603	(3)	Logistics Management
MGSC 605	(3)	Total Quality Management
MGSC 631	(3)	Analysis: Production Operations

**Complementary Courses - Manufacturing and Supply Chain Operations (13 credits)**

(12-13 credits)

6 credits from the following:

MECH 526	(3)	Manufacturing and the Environment
MGSC 575	(3)	Applied Time Series Analysis Managerial Forecasting
MGSC 601	(3)	Management of Technology in Manufacturing
MGSC 615	(3)	Procurement and Distribution

6-7 credits from the following:

0 or 6 credits from:

Discrete Manufacturing Option

MECH 528	(3)	Product Design
MECH 529	(3)	Discrete Manufacturing Systems

0-7 credits from:

Process Manufacturing Option

CHEE 571	(3)	Small Computer Applications: Chemical Engineering
CHEE 641	(4)	Chemical Reaction Engineering

**Required Courses - Industry (12 credits)**

MECH 627	(9)	Manufacturing Industrial Stage
MECH 628	(2)	Manufacturing Case Studies
MECH 629	(1)	Manufacturing Industrial Seminar

**11.5.11 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

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**11.6 Mining and Materials Engineering**

**11.6.1 Location**

Department of Mining and Materials Engineering  
 M.H. Wong Building  
 3610 University Street  
 Montreal, QC H3A 0C5  
 Canada

Email: [barbara.hanley@mcgill.ca](mailto:barbara.hanley@mcgill.ca)  
 Website: [www.mcgill.ca/minmat](http://www.mcgill.ca/minmat)

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

Materials Engineering  
Telephone: 514-398-4383  
Fax: 514-398-4492

## 11.6.2 About Mining and Materials Engineering

Graduate programs leading to M.Eng., M.Sc., and Ph.D. research degrees are available in the areas of Geomechanics; Mining Environments; Strategic Mine Planning and Optimization; Stochastic Modelling; Operations Research; Mineral Economics; Materials Handling; Process Metallurgy; Computational Thermodynamics; Hydrometallurgy; Effluent and Waste Treatment; Mineral Processing; Metal Casting and CFD Modelling; Surface Engineering; Composites; Ceramics; Electron Microscopy; Automotive and Aerospace Materials; Biomaterials; Nanomaterials; Nanoelectronic Materials; Multiscale Modelling of Materials; and Electronic and Solar Cell Materials.

Course programs leading to the M.Eng. (Project) degree in Mining or Materials Engineering and the Graduate Diploma in Mining Engineering are also available.

Special programs are available for those holding degrees in subjects other than Materials or Mining Engineering (e.g., Chemical, Civil, or Mechanical Engineering, Chemistry, Physics, Geology).

### *section 11.6.5: Master of Engineering (M.Eng.); Mining and Materials Engineering (Thesis) (45 credits)*

The M.Eng. (Thesis) degree is open to graduates holding the B.Eng. degree or its equivalent in Materials Engineering, Mining Engineering, or other related engineering fields.

### *section 11.6.6: Master of Science (M.Sc.); Mining and Materials Engineering (Thesis) (45 credits)*

The M.Sc. (Thesis) degree is open to graduates holding the B.Sc. degree in Chemistry, Materials Science, Physics, Geology, or related fields.

**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 satisfied the following:

1. they have a minimum CGPA of 3.3 for the last two full-time undergraduate years;
2. they have been in the master's program for less than 15 months;
3. they have 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. they have obtained a letter of recommendation from their supervisor.

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

Exceptional B.Eng. 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 11.6.7: Master of Engineering (M.Eng.); Mining and Materials Engineering (Non-Thesis) (45 credits)*

The Master of Engineering (Project) program (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. The Master of Engineering (Project) program (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.

### *section 11.6.8: Interdepartmental Graduate Program in Environmental Engineering (45 credits)*

This interdepartmental 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 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

### **11.6.3 Mining and Materials Engineering Admission Requirements and Application Procedures**

**Revision, October 2012. Start of revision.**

#### **11.6.3.1 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.Eng. (Thesis) degree is open to graduates holding the B.Eng. degree or its equivalent in Materials Engineering, Mining Engineering, or other related engineering fields.

The M.Sc. (Thesis) degree is open to graduates holding the B.Sc. degree in Chemistry, Materials Science, Physics, Geology, or related fields.

The Master of Engineering (Project) program (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) program (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 follow

## Professors

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

**Required Seminar (6 credits)**

One of the following courses:

Note: MIME 672D1 and MIME 672D2 should be taken concurrently

MIME 670	(6)	Research Seminar 1
MIME 672D1	(3)	Rock Mechanics Seminar
MIME 672D2	(3)	Rock Mechanics Seminar
MIME 673	(6)	Mining Engineering Seminar

**Required Courses (12 credits)**

Four 3-credit courses or the equivalent.

**11.6.6 Master of Science (M.Sc.); Mining and Materials Engineering (Thesis) (45 credits)**

**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 Seminar (6 credits)**

One of the follo



MIME 670	(6)	Research Seminar 1
MIME 673	(6)	Mining Engineering Seminar

**Complementary Courses**

(24-33 credits)

12 credits of 500-, 600-, or 700-level MIME courses.

12 to 21 credits of 500-, 600-, or 700-level courses from within or, subject to Departmental approval, outside the Department.

**11.6.8 Master of Engineering (M.Eng.); Mining and Materials Engineering (Non-Thesis) — Environmental Engineering (45 credits)**

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

**Research Project (6 credits)**

MIME 628	(6)	Mineral 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)	Biological Treatment: Wastewaters
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 501	(3)	Modelling Environmental Systems
GEOG 551	(3)	Environmental Decisions

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 Mining and Materials Engineering is the following:

MIME 629	(6)	Mineral Engineering Project 2
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## **11.7 Urban Planning**

### **11.7.1 Location**

School of Urban Planning  
Macdonald Harrington Building, Room 400  
815 Sherbrooke Street West

The Department of Urban Planning also offers the possibility of directly entering a Ph.D. program on an *ad hoc* basis, or, with the permission of the supervisor and the approval of the Graduate Program Director, exceptional students may transfer from the M.U.P. to the *ad hoc* Ph.D. program.

**section 11.7.5: Master of Urban Planning (M.U.P.); Urban Planning (Non-Thesis) (66 credits)**

The M.U.P. program requires two years of study, including a three-month 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 11.7.6: Master of Urban Planning (M.U.P.); Urban Planning (Non-Thesis) — Transportation Planning (66 credits)**

The Transportation Planning option (14.330, 333, 460, 689, 710, 725 in this file) is for students who study for the M.U.P. degree. Students who complete an internship, and a final project involve real-life work that prepares students for the professional practice of Urban Transportation Planning.

**section 11.7.7: Master of Urban Planning (M.U.P.); Urban Planning (Non-Thesis) — Urban Design (66 credits)**



**Note:** The Urban Design option is being suspended. Students interested in Urban Design will be able to specialize in this field of practice as part of the core M.U.P. program.

The Urban Design option allows students to specialize in this field as part of their course of study for the M.U.P. degree. Studio courses, an internship, and a final project involve real-life work that prepares students for the professional practice of Urban Design.

### 11.7.3 Urban Planning Admission Requirements and Application Procedures

**Revision, October 2012. Start of revision.**

#### 11.7.3.1 Admission Requirements

The M.U.P. degree is open to students holding a bachelor's degree or equivalent in Anthropology, Architecture, Economics, Engineering, Environmental Studies, Geography, Law, Management, Political Science, Social Work, Sociology, or Urban Studies. Students from other backgrounds are considered for admission on an individual basis.

In addition to the documents for admission required by Graduate and Postdoctoral Studies, the following must be submitted:

1. Statement of specific interest in the area of Urban Planning (one to two pages)
2. Curriculum Vitae
3. Portfolio: For architects only, a portfolio containing at least five (5) examples of architectural work accomplished in school and in practice demonstrating creativity and imagination. All applicants interested in the urban design concentration may wish to submit such a portfolio. Portfolios are not to exceed 8½" x 11" in size.
4. Applicants to graduate studies whose mother tongue is not English, and who have not completed an undergraduate or graduate degree from a foreign university.

### 11.7.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: Jan. 15	Fall: Jan. 15	Fall: Jan. 15
Winter: N/A	Winter: N/A	Winter: N/A
Summer: N/A	Summer: N/A	Summer: N/A

Revision, October 2012. End of revision.

### 11.7.4 Urban Planning Faculty

#### Director

Raphaël Fischler

#### Emeritus Professors

David Farley; B.Arch.(McG.), M.Arch., M.C.P.(Harv.)

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

#### Associate Professors

Madhav G. Badami; B.Tech., M.S.(IIT, Madras) M.E.Des.(Calg.), Ph.D.(Br

URBP 632 (6) Supervised Research Project 3

**Required Courses (27 credits)**

URBP 609 (3) Planning Graphics  
URBP 612 (3) History and Theory of Planning  
URBP 622 (6) Planning Studio 1  
URBP 623 (3) Planning Studio 2  
URBP 624 (6) Planning Studio 3  
URBP 633 (3) Planning Methods  
URBP 635 (3) Planning Law

**Required Internship (6 credits)**

URBP 618	(3)	Selected Topics 3
URBP 619	(3)	Land Use and Transportation Planning
URBP 620	(3)	Transportation Economics
URBP 625	(2)	Principles and Practice 2
URBP 626	(2)	Principles and Practice 3
URBP 629	(3)	Cities in a Globalizing World
URBP 634*	(3)	Planning Water Resources in Barbados
URBP 651	(3)	Redesigning Suburban Space

\* Courses open only to students enrolled in the Barbados Field Study Semester.

Students may elect to complete a Field Study Semester in Barbados during the Fall term of their second year in the program. With this option, URBP 519 is substituted for URBP 624. Coursework must include URBP 507, URBP 520, and URBP 634. All other requirements for the M.U.P. degree apply.

### Elective Courses

0-6 credits

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

### 11.7.6 Master of Urban Planning (M.U.P.); Urban Planning (Non-Thesis) — Transportation Planning (66 credits)

The 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 work that prepares students for the professional practice of urban transportation planning.

#### Research Project (15 credits)

URBP 630	(3)	Supervised Research Project 1
URBP 631	(6)	Supervised Research Project 2
URBP 632	(6)	Supervised Research Project 3

#### Required Internship (6 credits)

URBP 628	(6)	Practical Experience
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#### Required Courses (33 credits)

URBP 505	(3)	Geographic Information Systems
URBP 609	(3)	Planning Graphics
URBP 612	(3)	History and Theory of Planning
URBP 619	(3)	Land Use and Transportation Planning
URBP 622	(6)	Planning Studio 1
URBP 623	(3)	Planning Studio 2
URBP 624	(6)	Planning Studio 3
URBP 633	(3)	Planning Methods
URBP 635	(3)	Planning Law

#### Complementary Courses

6-12 credits from the following:

Urban



**Complementary Courses**

9-12 credits from the following including at least one ARCH course and one URBP course:

ARCH 515	(3)	Sustainable Design
ARCH 520	(3)	Montreal: Urban Morphology
ARCH 521	(3)	Structure of Cities
ARCH 527	(3)	Civic Design
ARCH 561	(3)	Affordable Housing Seminar 1
ARCH 562	(3)	Affordable Housing Seminar 2
ARCH 566	(3)	Cultural Landscapes Seminar
URBP 504	(3)	Planning for Active Transportation
URBP 506	(3)	Environmental Policy and Planning
URBP 530	(3)	Urban Environmental Planning
URBP 616	(3)	Selected Topics 1
URBP 619	(3)	Land Use and Transportation Planning

0-3 credits can be selected from other courses at the 500 or 600 levels in any academic unit at McGill or at another university, subject to the approval of the School.

ARCH 515	(3)	Sustainable Design
ARCH 528	(3)	History of Housing
ARCH 529	(3)	Housing Theory
ARCH 550	(3)	Urban Planning and Development
URBP 501	(2)	Principles and Practice 1
URBP 505	(3)	Geographic Information Systems
URBP 530	(3)	Urban Environmental Planning
URBP 607	(3)	Reading Course: Urban Planning
URBP 617	(3)	Selected Topics 2
URBP 618	(3)	Selected Topics 3
URBP 619	(3)	Land Use and Transportation Planning
URBP 625	(2)	Principles and Practice 2
URBP 626	(2)	Principles and Practice 3
URBP 629	(3)	Cities in a Globalizing World

