



**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.**

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- 1 Dean's Welcome, page 9
- 2 Graduate and Postdoctoral Studies, page 9
  - 2.1 Administrative Officers, page 9
  - 2.2 Location, page 9
  - 2.3 General Statement Concerning Higher Degrees, page 10
- 3 Important Dates 2012–2013, page 10
- 4 Graduate Studies at a Glance, page 10
  - 4.1 Graduate and Postdoctoral Degrees Offered by Faculty, page 10
  - 4.2 Master's Degrees and Prerequisites, page 12
  - 4.3 Master's Degree Programs and Specializations, page 13
  - 4.4 Doctoral Degrees, page 18
    - 4.4.1 Doctoral Degree Programs and Specializations, page 18
  - 4.5 Postdoctoral Research, page 21
  - 4.6 Graduate Diplomas and Graduate Certificates, page 21
- 5 Program Requirements, page 21
  - 5.1 Master's Degrees, page 21
  - 5.2 Doctoral Degrees, page 22
  - 5.3 Ad Personam Programs (Thesis Option Only), page 23
  - 5.4 Coursework for Graduate Programs, Diplomas, and Certificates, page 23
- 6 General Admission for Graduate Studies, page 24
  - 6.1 Application for Admission, page 24
  - 6.2 Admission Requirements (minimum requirements to be considered for admission), page 24
  - 6.3 Admission Tests, page 25
  - 6.4 Competency in English, page 25
  - 6.5 Admission to a Qualifying Program, page 26
  - 6.6 Admission to a Second Degree Program, page 26
  - 6.7 Admission to Two Degree Programs, page 26
  - 6.8 Admission to an Ad Personam Joint Program, page 26
  - 6.9 Reinstatement and Admission of Former Students, page 26
  - 6.10 Deferral of Admission, page 27
- 7 Fellowships, Awards, and Assistantships, page 27
- 8 Postdoctoral Research, page 27
  - 8.1 Postdocs, page 27
  - 8.2 Guidelines and Policy for Academic Units on Postdoctoral Education, page 27
  - 8.3 Vacation Policy for Graduate Students and Postdocs, page 29
  - 8.4 Leave of Absence for Health and Parental/Familial Reasons, page 29
  - 8.5 Postdoctoral Research Trainees, page 30
- 9 Graduate Studies Guidelines and Policies, page 30
- 10 Information on Research Policies and Guidelines, Patents, Postdocs, Associates, Trainees, page 31
- 11 Academic Programs, page 31



- 
- 11.3.6 Master of Science (M.Sc.); Civil Engineering (Thesis) (45 credits) , page 50
  - 11.3.7 Master of Engineering (M.Eng.); Civil Engineering (Non-Thesis) (45 credits) , page 51
  - 11.3.8 Master of Engineering (M.Eng.); Civil Engineering (Non-Thesis) — Environmental Engineering (45 credits) , page 51
  - 11.3.9 Doctor of Philosophy (Ph.D.); Civil Engineering , page 52
  - 11.4 Electrical and Computer Engineering, page 53
    - 11.4.1 Location, page 53
    - 11.4.2 About Electrical and Computer Engineering, page 53
    - 11.4.3 Electrical and Computer Engineering Admission Requirements and Application Procedures, page 54
      - 11.4.3.1 Admission Requirements, page 54
      - 11.4.3.2 Application Procedures, page 54
      - 11.4.3.3 Dates for Guaranteed Consideration, page 55
    - 11.4.4 Electrical and Computer Engineering Faculty, page 55
    - 11.4.5 Master of Engineering (M.Eng.); Electrical Engineering (Thesis) (46 credits) , page 57
    - 11.4.6 Master of Engineering (M.Eng.); Electrical Engineering (Thesis) — Computational Science and Engineering (47 credits) , page 57
    - 11.4.7 Master of Engineering (M.Eng.); Electrical Engineering (Non-Thesis) (47 credits) , page 59
    - 11.4.8 Doctor of Philosophy (Ph.D.); Electrical Engineering , page 59
  - 11.5 Mechanical Engineering, page 59
    - 11.5.1 Location, page 59
    - 11.5.2 About Mechanical Engineering, page 60
    - 11.5.3 Mechanical Engineering Admission Requirements and Application Procedures, page 62
      - 11.5.3.1 Admission Requirements, page 62
      - 11.5.3.2 Application Procedures, page 62
      - 11.5.3.3 Dates for Guaranteed Consideration, page 62
    - 11.5.4 Mechanical Engineering Faculty, page 62
    - 11.5.5 Master of Engineering (M.Eng.); Mechanical Engineering (Thesis) (45 credits) , page 64
    - 11.5.6 Master of Science (M.Sc.); Mechanical Engineering (Thesis) (45 credits) , page 64
    - 11.5.7 Master of Engineering (M.Eng.); Mechanical Engineering (Thesis) — Computational Science and Engineering (46 credits) , page 65
    - 11.5.8 Master of Engineering (M.Eng.); Mechanical Engineering (Non-Thesis) (45 credits) , page 66
    - 11.5.9 Master of Engineering (M.Eng.); Aerospace Engineering (Non-Thesis) (45 credits) , page 67
    - 11.5.10 Master of Management (M.M.M.); Manufacturing Management (Non-Thesis) (57 credits) , page 67
    - 11.5.11 Doctor of Philosophy (Ph.D.); Mechanical Engineering , page 68
  - 11.6 Mining and Materials Engineering, page 69
    - 11.6.1 Location, page 69
    - 11.6.2 About Mining and Materials Engineering, page 69
    - 11.6.3 Mining and Materials Engineering Admission Requirements and Application Procedures, page 70
      - 11.6.3.1 Admission Requirements, page 70
      - 11.6.3.2 Application Procedures, page 70

- 
- 11.6.3.3 Dates for Guaranteed Consideration, page 70
  - 11.6.4 Mining and Materials Engineering Faculty, page 71
  - 11.6.5 Master of Engineering (M.Eng.); Mining and Materials Engineering (Thesis) (45 credits) , page 72
  - 11.6.6 Master of Science (M.Sc.); Mining and Materials Engineering (Thesis) (45 credits) , page 72
  - 11.6.7 Master of Engineering (M.Eng.); Mining and Materials Engineering (Non-Thesis) (45 credits) , page 73
  - 11.6.8 Master of Engineering (M.Eng.); Mining and Materials Engineering (Non-Thesis) — Environmental Engineering (45 credits) , page 73
  - 11.6.9 Doctor of Philosophy (Ph.D.); Mining and Materials Engineering , page 75
  - 11.6.10 Graduate Diploma in Mining Engineering (30 credits) , page 75
  - 11.7 Urban Planning, page 75
    - 11.7.1 Location, page 75
    - 11.7.2 About Urban Planning, page 75
    - 11.7.3 Urban Planning Admission Requirements and Application Procedures, page 76
      - 11.7.3.1 Admission Requirements, page 76
      - 11.7.3.2 Application Procedures, page 77
      - 11.7.3.3 Dates for Guaranteed Consideration, page 77
    - 11.7.4 Urban Planning Faculty, page 77
    - 11.7.5 Master of Urban Planning (M.U.P.); Urban Planning (Non-Thesis) (66 credits) , page 78
    - 11.7.6 Master of Urban Planning (M.U.P.); Urban Planning (Non-Thesis) — Transportation Planning (66 credits) , page 79
    - 11.7.7 Master of Urban Planning (M.U.P.); Urban Planning (Non-Thesis) — Urban Design (66 credits) , page 80



## 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.)

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

Shari Baum; B.A.(C'nell), M.Sc.(Vermont), Ph.D.(Brown)

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

Laura Nilson; B.A.(Colgate), Ph.D.(Yale)

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

Lisa deMena Travis; B.A.(Yale), Ph.D.(MIT)

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

Charlotte E. Légaré; B.Sc.(Montr.), M.Sc.(Sher.), M.B.A.(McG.)

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

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

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### **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.

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## **3 Important Dates 2012–2013**

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

<b>Faculty of Arts</b>	<b>Degrees Available</b>
<i>: Jewish Studies</i>	M.A.
<i>: Languages, Literatures, and Cultures</i>	M.A., Ph.D.
<i>: Linguistics</i>	M.A., Ph.D.
<i>: Mathematics and Statistics</i>	M.A., Ph.D.
<i>: Philosophy</i>	M.A., Ph.D.
<i>: Political Science</i>	M.A., Ph.D.
<i>: Psychology</i>	M.A., Ph.D.
<i>: Quebec Studies / Études sur le Québec</i>	N/A
<i>: Social Studies of Medicine</i>	N/A
<i>: Social Work</i>	M.S.W., Ph.D.
<i>: Sociology</i>	M.A., Ph.D.
<b>School of Dentistry</b>	<b>Degrees Available</b>
<i>: Dentistry</i>	M.Sc.
<b>Desautels Faculty of Management</b>	<b>Degrees Available</b>
<i>: Desautels Faculty of Management</i>	M.B.A., M.B.A. with Integrated B.C.L./LL.B., M.D./M.B.A., M.B.A./Japan, E.M.B.A., M.M.M., M.M., Ph.D., Graduate Certificate, Diploma
<b>Faculty of Education</b>	<b>Degrees Available</b>
<i>: Educational and Counselling Psychology</i>	M.A., M.Ed., Ph.D., Graduate Diploma
<i>: Information Studies</i>	M.L.I.S., Ph.D., Graduate Certificate, Graduate Diploma
<i>: Integrated Studies in Education</i>	M.A., Ph.D., Graduate Certificate
<i>: Kinesiology and Physical Education</i>	M.A., M.Sc.
<b>Faculty of Engineering</b>	<b>Degrees Available</b>
<i>section 11.1: Architecture</i>	M.Arch., Ph.D.
<i>section 11.2: Chemical Engineering</i>	M.Eng., Ph.D.
<i>section 11.3: Civil Engineering and Applied Mechanics</i>	M.Sc., M.Eng., Ph.D.
<i>section 11.4: Electrical and Computer Engineering</i>	M.Eng., Ph.D.
<i>section 11.5: Mechanical Engineering</i>	M.Sc., M.Eng., Ph.D.
<i>section 11.6: Mining and Materials Engineering</i>	M.Sc., M.Eng., Ph.D., Graduate Diploma
<i>section 11.7: Urban Planning</i>	M.U.P.
<b>Faculty of Law</b>	<b>Degrees Available</b>
<i>: Law</i>	LL.M., D.C.L., Graduate Certificate
	<b>Degrees Av</b>

<b>Faculty of Medicine</b>	<b>Degrees Available</b>
: <i>Communication Sciences and Disorders</i>	M.Sc., M.Sc.A., Ph.D.
: <i>Epidemiology and Biostatistics</i>	M.Sc., Ph.D., Graduate Diploma
: <i>Human Genetics</i>	M.Sc., Ph.D.
: <i>Medical Physics</i>	M.Sc.
: <i>Medicine, Experimental</i>	M.Sc., Ph.D., Graduate Diploma
: <i>Medicine, Family (Option)</i>	N/A
: <i>Microbiology and Immunology</i>	M.Sc., Ph.D.
: <i>Neuroscience (Integrated Program in)</i>	M.Sc., Ph.D.
: <i>Occupational Health</i>	M.Sc.A., Ph.D.
: <i>Otolaryngology – Head and Neck Surgery</i>	M.Sc.
: <i>Pathology</i>	M.Sc., Ph.D.
: <i>Pharmacology and Therapeutics</i>	M.Sc., Ph.D.
: <i>Physiology</i>	M.Sc., Ph.D.
: <i>Psychiatry</i>	M.Sc.
: <i>Surgery, Experimental (Division of Surgical Research)</i>	M.Sc., Ph.D., Graduate Diploma
<b>School of Nursing</b>	<b>Degrees Available</b>
: <i>Nursing</i>	M.Sc.A., Ph.D., Graduate Certificate, Graduate Diploma
<b>School of Physical and Occupational Therapy</b>	<b>Degrees Available</b>
: <i>Physical and Occupational Therapy</i>	M.Sc., M.Sc.A., Ph.D., Graduate Certificate
<b>Faculty of Religious Studies</b>	<b>Degrees Available</b>
: <i>Religious Studies</i>	M.A., S.T.M., Ph.D.
<b>Schulich School of Music</b>	<b>Degrees Available</b>
: <i>Schulich School of Music</i>	M.A., M.Mus., D.Mus., Ph.D., Graduate Diploma
<b>Faculty of Science</b>	<b>Degrees Available</b>
: <i>Atmospheric and Oceanic Sciences</i>	M.Sc., Ph.D.
: <i>Biology</i>	M.Sc., Ph.D.
: <i>Chemistry</i>	M.Sc., M.Sc.A., Ph.D.
: <i>Computer Science</i>	M.Sc., Ph.D.
: <i>Earth and Planetary Sciences</i>	M.Sc., Ph.D.
: <i>Geography</i>	M.Sc., Ph.D.
: <i>Mathematics and Statistics</i>	M.Sc., Ph.D.
: <i>Physics</i>	M.Sc., Ph.D.
: <i>Psychology</i>	M.Sc., Ph.D.

## 4.2 Master's Degrees and Prerequisites

The following list shows all of the master's degrees available at McGill, along with their prerequisites. See [section 4.3: Master's Degree Programs and Specializations](#) for more information on specific programs and options.

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</b>	<b>Thesis/Non-Thesis</b>	<b>Options</b>
Professional	Non-Thesis	Design Studio, Design Studio – Directed Research
Post-professional	Non-Thesis	Architectural History and Theory, Cultural Mediations and Technology, Urban Design and Housing

**Master of Arts (M.A.)**

Programs leading to the degree of Master of Arts are offered in the following areas:





Program	Thesis/Non-Thesis	Options
Law	Thesis, Non-Thesis	Bioethics, European Studies (Thesis) Air and Space Law, Environment, Comparative Law (Thesis and Non-Thesis)

**Master of Library and Information Studies (M.L.I.S.)**

The Graduate School of Library and Information Studies offers a postgraduate professional program in librarianship. Two years of full-time study or the equivalent are required.

Program	Thesis/Non-Thesis	Options
Information Studies	Non-Thesis	N/A

**Master of Music (M.Mus.)**

Program	Thesis/Non-Thesis	Options
Music – Composition	Non-Thesis	N/A
Performance	Thesis	Vocal Pedagogy, Jazz Performance, Early Music, Orchestral Instruments and Guitar, Collaborative Piano, Piano, Opera and Voice, Organ and Church Music, Conducting
Sound Recording	Non-Thesis	N/A

**Master of Sacred Theology (S.T.M.)**

A program leading to the degree of Sanctae Theologiae Magister (S.T.M.) is given in the Faculty of Religious Studies. This degree is primarily for those who intend to enter the ministry of the Christian Church or another religious institution, or to proceed to teaching in schools. A Master of Arts program (thesis and non-thesis) is also available.

Program	Thesis/Non-Thesis	Options
Religious Studies	Non-Thesis	N/A

**Master of Science (M.Sc.)**

Program Areas	Thesis/Non-Thesis	Options
Agricultural Economics	Thesis	N/A
Animal Science	Thesis	N/A
Atmospheric and Oceanic Science	Thesis	Environment (Thesis)
Biochemistry	Thesis	Bioinformatics, Chemical Biology (Thesis)
Biology	Thesis	Bioinformatics, Environment, Neotropical Environment
Bioresource Engineering	Thesis, Non-Thesis	Environment, Neotropical Environment (Thesis) Integrated Water Resource Management (Non-Thesis)
Biostatistics	Thesis, Non-Thesis	N/A
Cell Biology	Thesis	N/A
Chemistry	Thesis	Chemical Biology
Civil Engineering	Thesis	N/A
Communication Sciences and Disorders	Thesis	N/A
Computer Science	Thesis, Non-Thesis	Bioinformatics, Computational Science, Engineering (Thesis)
Dental Science	Thesis, Non-Thesis	Oral and Maxillofacial Surgery (Thesis)
Earth and Planetary Sciences	Thesis	Environment
Entomology	Thesis	Environment, Neotropical Environment
Epidemiology	Thesis	N/A
Experimental Medicine	Thesis	Bioethics, Environment, Family Medicine
Experimental Surgery	Thesis	Surgical Research



Program Areas	Thesis/Non-Thesis	Options
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, Applied (M.Sc.A.)

This degree was designed to provide postgraduate training of a professional and vocational character, with less emphasis on theoretical knowledge and research than in Master of Science programs, but with no lower standards either for admission or completion of requirements. Two years of full-time study or equivalent are normally required with an emphasis on coursework.

Program	Thesis/Non-Thesis	Options
Animal Science	Non-Thesis	N/A
Bioresource Engineering	Non-Thesis	Environment, Environmental Engineering, Neotropical Environment
Biotechnology	Non-Thesis	N/A
Chemistry	Non-Thesis	N/A
Communication Sciences and Disorders	Non-Thesis	Speech-Language Pathology
Human Nutrition	Non-Thesis (Project), Non-Thesis (Practicum)	N/A
Nursing	Non-Thesis	N/A
Occupational Health	Non-Thesis (Resident), Non-Thesis (Distance)	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
Experimental Surgery (Surgical Research)	N/A	Faculty of Medicine
Food Science and Agricultural Chemistry	N/A	Faculty of Agricultural and Environmental Sciences
French Language and Literature	Gender and Women's Studies	Faculty of Arts
Geography	Environment, Gender and Women's Studies, Neotropical Environment	Faculty of Arts, Faculty of Science
German	N/A	Faculty of Arts
Hispanic Studies	N/A	Faculty of Arts
History	N/A	Faculty of Arts
Human Genetics	Bioinformatics	Faculty of Medicine
Human Nutrition	N/A	Faculty of Agricultural and Environmental Sciences

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	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

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<b>Program</b>	<b>Options</b>	<b>Offered by Faculty/School</b>
Psychiatry	N/A	Faculty of Medicine
Urban Planning	N/A	Faculty of Engineering

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**P**

- 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 Therap



**Note:** The master's degree must have been awarded before initial registration in the doctoral program; otherwise, the admission level will be at Ph.D. 1 and residency will be extended to three years. Once the level of admission is approved, it will not be changed after obtaining the master's degree if the date falls after registration in the program. If a previous awarded degree is a condition of admission, it must be fulfilled before registration in another program.

As a rule, no more than one-third of the McGill program formal coursework can be credited with courses from another university.

#### **Comprehensive Examinations – Doctoral**

A comprehensive examination or its equivalent is usually held near the end of Ph.D. 2. The results of this examination determine whether or not students will be permitted to continue in their programs. The methods adopted for examination and evaluation and the areas to be examined are specified by departmental regulations approved by the Dean of Graduate and Postdoctoral Studies. It is the responsibility of students to inform themselves of these details at the commencement of their programs. For more information, see *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > Guidelines and Policies > : Ph.D. Comprehensives Policy*.

#### **Language Requirements – Doctoral**

Most graduate departments in the Faculties of Agricultural and Environmental Sciences, Education, Engineering, Management, Medicine, and Science do not require a language examination. Students should inquire in their departments if there are any such requirements or whether any other requirements have

English and French language courses offered by the French Language Centre (Faculty of Arts) or the School of Continuing Studies may not be taken for coursework credits toward a graduate program.

All substitutions for coursework in graduate programs, diplomas, and certificates must be approved by GPS.

Courses taken at other institutions to be part of the requirements of a program of studies must be approved by GPS before registration. Double counting is not permitted.

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## 6 General Admission for Graduate Studies

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

Email: [servicepoint@mcgill.ca](mailto:servicepoint@mcgill.ca)

**Deadline: Admission to graduate studies operates on a rolling basis; complete applications and their supporting documentation must reach departmental offices on or before the Date for Guaranteed Consideration specified by the department. To be considered for entrance fellowships, where available, applicants must verify the deadlines with individual departments. Meeting minimum admission standards does not guarantee admission.**

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### 6.1 Application for Admission

Application information and the online application form are available at [www.mcgill.ca/gradapplicants/apply](http://www.mcgill.ca/gradapplicants/apply). Applicants (with some exceptions) are required to ask two instructors familiar with their work to send letters of recommendation. All applicants must themselves send, or ask the appropriate university authorities to send, two official or certified copies of their complete academic record from each university-level institution attended to date. McGill graduates do not need to submit McGill transcripts. Letters of recommendation and official transcripts must be sent **directly** to the department concerned. Please note that all documents submitted to McGill Uni

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## 6.3 Admission Tests

### 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 re1 0 0 1 433.2 0 1 315.277 6OMn

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## 6.5 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 toward a degree. Qualifying year students must apply for admission to the program for which they seek qualification.

In cases where a department recommends a change of registration from Qualifying Program (Fall) to Master's Degree First Year (Winter), **students must apply to the degree program by the Winter departmental Dates for Guaranteed Consideration**. A Qualifying year applicant admitted to a Winter term as a first term of studies must apply for admission for a Fall term as his/her second term of studies.

Students who are ineligible for a Qualifying Program may apply to the appropriate undergraduate faculty for admission as regular or Special Students, and seek admission to graduate studies at a later date. The normal admission requirements must be met and the usual procedures followed.

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## 6.6 Admission to a Second Degree Program

A candidate with a given higher degree may apply for admission to a second degree program at the same level but **in a different subject**. The normal admission requirements must be met and all the usual procedures followed.

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## Admission to Two Degree Pr



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 awarded a Ph.D. or equivalent degree. Time allocated to parental or health leave is added to this period of time. Lea

- i. Postdocs are subject to the responsibilities outlined in the *Handbook on Student Rights and Responsibilities* (“Green Book”), available at [www.mcgill.ca/secretariat/policies/students](http://www.mcgill.ca/secretariat/policies/students).
- 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;
  -

under *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > : Health and Parental/Familial Leave of Absence Policy*. 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. 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/postdocs/becoming/leave](http://www.mcgill.ca/gps/postdocs/becoming/leave) under “Information on the Funding Council Leave Policies for Graduate Students and Postdoctoral Fellows.”

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## 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 equi

- Guideline on Hours of Work

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## 10 Information on Research Policies and Guidelines, Patents, Postdocs, Associates, Trainees

Refer to *Programs, Courses and University Regulations > University Regulations and Resources > Graduate > : Research Policy and Guidelines, Patents, Postdocs, Associates, Trainees* for information on the following:

- Policy on Research Ethics
- Regulations on Research Policy
- Policy on Research Integrity
- Guidelines for Research Involving Human Subjects
- Guidelines for Research with

There are three areas of study in the M.Arch. (Post-professional) and Ph.D. programs: Architectural History and Theory; Cultural Mediations and Technology; and Urban Design and Housing.

Information concerning the duration of programs, documents required of applicants, etc., may be obtained from:

- [profdegree.architecture@mcgill.ca](mailto:profdegree.architecture@mcgill.ca) (for the B.Sc. (Arch.) and M.Arch. (Professional))
- [postprofmaster.architecture@mcgill.ca](mailto:postprofmaster.architecture@mcgill.ca) (for the M.Arch. (Post-professional))
- [phd.architecture@mcgill.ca](mailto:phd.architecture@mcgill.ca) (for the Ph.D.)

### **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 five-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.

### **Professional Programs**

There are two options for the completion of this CACB-accredited degree: Design Studio (45 credits) and Design Studio Directed Research (60 credits).

#### ***section 11.1.5: Master of Architecture (M.Arch.); Professional (Non-Thesis) — Design Studio (45 credits)***

The Master of Architecture (Professional) Non-Thesis – Design Studio concentration requires a minimum of three terms (45 credits) for completion according to an intensive design studio-based curriculum. This option is a three-term consecutive degree (Fall, Winter, Summer) requiring full-time residence for one calendar year. For further information regarding admission eligibility and requirements, please see: [www.mcgill.ca/architecture/programs/professional](http://www.mcgill.ca/architecture/programs/professional).

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

The Master of Architecture (Professional) Non-Thesis – Design Studio Directed Research concentration is a four-term (60-credit) option, which, as a modified version of the regular three-term (45-credit) stream, remains a project-based investigation with an intensive research component. Candidates within this concentration option are assigned a faculty adviser and engage in project-based directed research through an approved curriculum. It concludes with a two-term final project that includes a written component to the project-based investigation. Areas of research interest must be specified as indicated in the application form. Complementary and elective courses are approved in consultation with the adviser. For further information regarding admission eligibility and requirements, please see: [www.mcgill.ca/architecture/programs/professional](http://www.mcgill.ca/architecture/programs/professional).

### **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 30 credits of coursework, to be completed in the first two terms, and a 15-credit research report (Cultural Mediations and Technology, Urban Design, and Housing) or 15-credit project (Architectural History and



***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 e



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

4. Resumé or CV.
5. A two-page (maximum) research statement indicating the general area of interest (e.g., History/Theory/Culture; Digital Technologies; Urban Design

- 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).

Please mail all support documents to:

M.Arch. (Professional) Program  
School of Architecture  
McGill University  
Macdonald-Harrington Building  
815 Sherbrooke Street West, Room 202  
Montreal, QC H3A 0C2



**Note:** When sending packages from abroad, do not assign a monetary value on the customs declaration; otherwise, customs fees will be applied.

*\* These documents are available in PDF or DOC format on the School of Architecture website.*

**Post-professional programs:**

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

1. Please complete and submit an online web application at [www.mcgill.ca/gradapplicants/apply](http://www.mcgill.ca/gradapplicants/apply) (due January 15).
2. A non-refundable application fee of CAD\$100, payable by credit card only after completing the online application.
3. Two (2) sets of official transcripts must be sent directly to the School of Architecture by the registrars of all universities previously attended. Transcripts must be received



**Course Lecturers**

Torben Berns, Christina Contandriopoulos, Nancy Dunton, Ron Jelaco, Sevag Pogharian, Enrique Ramos, Pierina Saia, Pieter Sijpkes

**11.1.5 Master of Architecture (M.Arch.); Professional (Non-Thesis) — Design Studio (45 credits)**

This concentration requires a minimum of three terms (45 credits) for completion according to an intensive design studio-based curriculum. This option is a three-term consecutive degree (Fall, Winter, Summer) that requires full-time residence for one academic year.

**Required Courses (30 credits)**

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

**Complementary Courses**

9-15 credits selected as follows:

Group A:

6 credits of advanced-level seminars must be chosen from Group A.

ARCH 525	(3)	Seminar on Analysis and Theory
ARCH 531	(3)	Architectural Intentions Vitruvius - Renaissance
ARCH 532	(3)	Origins of Modern Architecture
ARCH 626	(4)	Critical Design Strategies
ARCH 684	(4)	Contemporary Theory 1
ARCH 685	(4)	Contemporary Theory 2

Group B:

3 credits chosen from Group B.

ARCH 512	(3)	Architectural Modelling
ARCH 514	(4)	Community Design Workshop
ARCH 515	(3)	Sustainable Design
ARCH 520	(3)	Montreal: Urban Morphology
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 533	(3)	New Approaches to Architectural History
ARCH 534	(3)	Architectural Archives
ARCH 540	(3)	Selected Topics in Architecture 1
ARCH 541	(3)	Selected Topics in Architecture 2

ARCH 554	(2)	Mechanical Services
ARCH 622	(3)	Critical Writing
ARCH 626	(4)	Critical Design Strategies
ARCH 679	(3)	Writing in Architecture
ARCH 684	(4)	Contemporary Theory 1
ARCH 685	(4)	Contemporary Theory 2

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

### 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 531	(3)	Architectural Intentions Vitruvius - Renaissance
ARCH 532	(3)	Origins of Modern Architecture
ARCH 561	(3)	Affordable Housing Seminar 1
ARCH 562	(3)	Affordable Housing Seminar 2
ARCH 602	(4)	Urban Design Seminar 1
ARCH 604	(4)	Urban Design Seminar 2
ARCH 684	(4)	Contemporary Theory 1
ARCH 685	(4)	Contemporary Theory 2

ARCH 512	(3)	Architectural Modelling
ARCH 514	(4)	Community Design Workshop
ARCH 515	(3)	Sustainable Design
ARCH 517	(3)	Sustainable Residential Development
ARCH 520	(3)	Montreal: Urban Morphology
ARCH 521	(3)	Structure of Cities
ARCH 523	(3)	Significant Texts and Buildings
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

(0-8 credits)

A maximum of 8 credits may be completed outCH 51rede2W721.949 316.84 Tm(Urban Do1474.04 Tm(ArchitTj89of 8 credits ma 165.864 426p1def 8 credits 3 1 2g32U

**11.1.7 Master of Architecture (M.Arch.); Post-professional (Non-Thesis) — Architectural History and Theory (45 credits)**

The program consists of three semesters of coursework to be completed in 12 months. Intensiv



ARCH 603	(6)	Urban Design Studio
ARCH 604	(4)	Urban Design Seminar 2
ARCH 623	(3)	Project Preparation
ARCH 627	(4)	Research Methods for Architects

**Complementary Courses (9 credits)**

ARCH 515	(3)	Sustainable Design
ARCH 517	(3)	Sustainable Residential Development
ARCH 520	(3)	Montreal: Urban Morphology
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

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## 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, FQRNT, 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 have at least some involvement 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, and 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; and oil and gas flow assurance; as well as 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 f

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.

### 11.2.3.2 Application Procedure

The application procedure is outlined at [www.mcgill.ca/chemeng/grad/application](http://www.mcgill.ca/chemeng/grad/application). Full applications will be considered when the Graduate Admissions Committee has received:

1. application form of Graduate and Postdoctoral Studies ([www.mcgill.ca/gradapplicants/apply](http://www.mcgill.ca/gradapplicants/apply));
2. two official transcripts;
3. two letters of reference;
4. application fee of CAD\$100;
5. TOEFL test results (if required).

### 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.

## 11.2.4 Chemical Engineering Faculty

### Chair

D. Berk

### Emeritus Professors

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

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

J.H. Vera; B.Mat.(Chile), Ing.Quim.(U.T.E.), M.S.(Calif.), Dr.Ing.(Santa Maria), Eng.

### Professor

A.D. Rey; B.Ch.E.(CCNY), Ph.D.(Calif.) (*James McGill Professor*)

### Associate Professors

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

S. Coulombe; B.Sc., M.Sc.A.(Sher.), Ph.D.(McG.), Jr. Eng. (*CRC-Tier II*)

R.J. Hill; B.E.(Auck.), Ph.D.(C'nell) (*CRC-Tier II*)

R.L. Leask; B.A.Sc., M.A.Sc.(Wat.), Ph.D.(Tor.), P.Eng. (*William Dawson Scholar*)

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

J.-L. Meunier; D.Ing.(E.P.F.L.), M.Sc., Ph.D.(I.N.R.S.), Eng.

S. Omanovic; B.Sc., Ph.D.(Zagreb)

T.M. Quinn; B.Sc.(Qu.), S.M., Ph.D.(MIT), Jr. Eng. (*CRC-Tier I*)

P. Servio; B.A.Sc., Ph.D.(Br. Col.) (*CRC-Tier II*)

N. Tufenkji; B.Eng.(McG.), M.Sc., Ph.D.(Yale), Jr. Eng. (*CRC-Tier II*)

V. Yargeau; B.Ch.E., M.Sc.A., Ph.D.(Sher.), Eng.

### **Assistant Professors**

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

J. Gostick; B.Eng.(Ryerson), M.A.Sc., Ph.D.(Wat.)

E. Jones; B.A.Sc.(Wat.), M.S., Ph.D.(Cal. Tech.) Jr. Eng. (*CRC-Tier II*)

A. Kietzig; Dipl.Ing.(TU Berlin), Ph.D.(Br. Col.)

### **Paprican Adjunct Professor**

G.J. Kubes; B.Sc., M.Sc.(Prague), Ph.D.(Bratislava), P.Eng.

### **Adjunct Professors**

T. Addona, P. Bisailon, M. Davidovsky, A. DeMori, D. Dionne, M. F

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.

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.

**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.

**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:



McGill approximately eight weeks after the test is taken. It is the student's responsibility to make the necessary arrangements with the examining board to write the test in the country of residence. Full information about the test and a registration form may be obtained by writing to: Test of English as a Foreign Language, Box 6191, Princeton, New Jersey 08540-6151, USA (



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)

**M1.3.78T/F1.811-T11.0.01.67.52.350.854 Tr (Thes program units of a minimum of 34 credits, of which depending on the student's home**

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.

**Master of Engineering (M.Eng.); Civil Engineering (Non-Thesis) — Enis**



## 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 faculty members and 300 postgraduate students. The major activities are divided into the following groups: Bio-Electrical Engineering; Telecommunications and Signal Processing; Systems and Control; Integrated Circuits and Systems; Nano-Electronic Devices and Materials; Photonics Systems; Computational Electromagnetics; Power Engineering; and Intelligent Systems. 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 laboratories for research in Robotics, Control, and Vision are in the Centre for Intelligent Machines (CIM).
- Telecommunications laboratories focus their work on signal processing, broadband communications, and networking; these laboratories form part of the Centre for Advanced Systems and Communications (SYTACom), 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 Circuits and Systems Laboratory (ICaS) 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

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

#### 11.4.3.3 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: Jan. 15	Summer: N/A

All documents must be received by the Department's Admissions Committee by the Dates for Guaranteed Consideration.

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

#### 11.4.4 Electrical and Computer Engineering Faculty

##### Chair (*Interim*)

Fabrice Labeau

##### Graduate Program Director

Richard Rose

##### Emeritus Professors

Eric L. Adler; B.Sc.(Lond.), M.A.Sc.(Tor.), Ph.D.(McG.), F.I.E.E.E., Eng.

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.

Clifford H. Champness; M.Sc.(Lond.), Ph.D.(McG.)

Gerry W. Farnell; B.A.Sc.(Tor.), S.M.(MIT), Ph.D.(McG.), F.I.E.E.E., Eng.

Francisco D. Galiana; B.Eng.(McG.), S.M., Ph.D.(MIT), F.I.E.E.E., Eng.

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

Lorne Mason; M.Eng., Ph.D.(Sask.)

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.

##### Professors

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. (*James McGill Professor and Macdonald Professor*)

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

Lawrence Chen; B.Eng.(McG.), M.A.Sc., Ph.D.(Tor.)

James Clark; B.Sc., Ph.D.(Br. Col.) (*Associate Dean, Academic*)

Frank Ferrie; B.Eng., Ph.D.(McG.)

Geza Joos; B.Sc.(C'dia), M.Eng., Ph.D.(McG.) (*CRC Chair*)

Andrew G. Kirk; B.Sc.(Brist.), Ph.D.(Lond.) (*William Dawson Scholar*)

Tho Le-Ngoc; M.Eng.(McG.), Ph.D.(Ott.), F.I.E.E.E.

Harry Leib; B.Sc.(Technion), 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.

David A. Lowther; B.Sc.(Lond.), Ph.D.(C.N.A.A.), F.C.A.E., Eng. (*James McGill Professor*)

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., P.Eng. (*James McGill Professor*)

Gordon Roberts; B.A.Sc.(Wat.), M.A.Sc., Ph.D.(Tor.), Eng. (*James McGill Professor*) F.I.E.E.E.

## Professors

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

## Associate Professors

Ramesh Abhari; M.A.Sc.(Tehran), Ph.D.(Tor.)

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

Jan Bajcsy; B.Sc.(Harv.), M.Eng., Ph.D.(Princ.)

Benoit Boulet; B.Sc.(Laval), M.Eng.(McG.), Ph.D.(Tor.) (*William Dawson Scholar*)

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

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 Schwid S873cz, 0 0 1 70.52 K6



**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, students may be allowed to take more than two non-Departmental courses; a letter of recommendation from their supervisor outlining the reason for such an action is required.

Under no circumstances will more than three non-Departmental courses be permitted.

**11.4.6 Master of Engineering (M.Eng.); Electrical Engineering (Thesis) — Computational Science and Engineering (47 credits)**

Program under review for 2012-2013 - may not be offered.

**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

**Required Course (1 credit)**

ECSE 670D1	(.5)	Computational Science Engineering Seminar
ECSE 670D2	(.5)	Computational Science Engineering Seminar

**Complementary Courses (18 credits)**

(minimum 18 credits)

Six courses at the graduate level (500 or above) are required (minimum 18 credits), with a grade of B- or better. Two courses (minimum 6 credits) from List A, and two courses (minimum 6 credits) from List B. At least two of the courses taken from Lists A and B must be from outside the Department of Electrical and Computer Engineering.

**List A: Scientific Computer Courses**

CIVE 602	(4)	Finite Element Analysis
COMP 522	(4)	Modelling and Simulation

COMP 540	(3)	Matrix Computations
COMP 566	(3)	Discrete Optimization 1
MATH 578	(4)	Numerical Analysis 1
MATH 579	(4)	Numerical Differential Equations

**List B: Applications and Specialized Methods Courses**

ATOC 512	(3)	Atmospheric and Oceanic Dynamics
ATOC 513	(3)	Waves and Stability
ATOC 515	(3)	Turbulence in Atmosphere and Oceans
CIVE 514	(3)	Structural Mechanics
CIVE 572	(3)	Computer Design and Analysis (Fundamentals of Fluid Dynamics)
CIVE 603	(4)	Structural Dynamics
COMP 505	(4)	Advanced Computer Architecture
COMP 557	(4)	Fundamentals of Computer Graphics
COMP 558	(4)	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	(4)	Computer Graphics
	(4)	Finite Elements in Electrodynamics
	(4)	Optimization

**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
ECSE 655	(5)	M.Eng. Project 5
ECSE 656	(5)	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**

(27-36 credits)

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

\* Under special circumstances, and subject to Departmental approval, students may be allowed to take more than three non-Departmental courses; a letter of recommendation from their supervisor outlining the reason for such an action is required.

Under no circumstance will more than four non-Departmental courses be permitted.

**11.4.8 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.

**11.5 Mechanical Engineering****11.5.1 Location**

Department of Mechanical Engineering  
Macdonald Engineering Building  
817 Sherbrooke Street West, Room MD-270  
Montreal, QC H3A 0C3  
Canada

Telephone (Admissions & Scholarships): 514-398-8869  
Telephone (All other inquiries): 514-398-6281  
Fax: 514-398-7365

Email (Admissions & Scholarships): [grad.mecheng@mcgill.ca](mailto:grad.mecheng@mcgill.ca)  
Email (All other inquiries): [gradcoordinator.mecheng@mcgill.ca](mailto:gradcoordinator.mecheng@mcgill.ca)  
Website: [www.mcgill.ca/mecheng/grad](http://www.mcgill.ca/mecheng/grad)

### 11.5.2 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 five areas:

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

W

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

For students who would like to concentrate on computational work for their research, the M.Eng. (Thesis) – Computational Science and Engineering (CSE) option is a

### **11.5.3 Mechanical Engineering Admission Requirements and Application Procedures**

#### **11.5.3.1 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.Eng. (Thesis) program, including the CSE Option, must hold an undergraduate degree (or equivalent) in Engineering. 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.

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 to the Ph.D. program must have successfully completed a master's degree program (or equivalent) in Engineering or the Physical Sciences. Students are not admitted directly from an undergraduate program into the Ph.D. program.







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
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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.

**11.5.7 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
		M.Eng. Thesis Research Proposal

CIVE 572	(3)	Computational Hydraulics
CIVE 603	(4)	Structural Dynamics
COMP 505	(3)	Advanced Computer Architecture
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 651	(4)	Asymptotic Expansion and Perturbation Methods
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

### 11.5.8 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
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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
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**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: Master of Engineering (M.Eng.); Mining and Materials Engineering (Non-Thesis) — 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 consult with the Graduate Program Director prior to enrolling in the program.

**section 11.6.9: Doctor of Philosophy (Ph.D.); Mining and Materials Engineering**

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

**section 11.6.10: Graduate Diploma in 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.

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

#### 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 a Qualifying term. Industrial experience is favourably viewed for entrance into the program, but is not considered a necessity.

The Master of Engineering (Project) program (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 that are admitted to Ph.D. 2.

#### 11.6.3.2 Application Procedures

Applications will be considered upon receipt of:

1. [www.mcgill.ca/gradapplicants/apply](http://www.mcgill.ca/gradapplicants/apply) application form;
2. two official copies of transcripts;
3. two letters of reference;
4. CAD\$100 application fee;
5. TOEFL or IELTS test results.

All information is to be submitted directly to the Graduate Coordinator in the Department of Mining and Materials Engineering.

#### 11.6.3.3 Dates for Guaranteed Consideration

Canadian	International	Special/Exchange/Visiting
Fall: Jan. 15	Fall: Jan. 15	Fall: Jan. 15









**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:

**11.6.9 Doctor of Philosophy (Ph.D.); Mining and Materials Engineering**

A candidate for this degree must pass a minimum of two courses assigned by the Department. These are selected on the basis of the student's previous academic training and research interests. The candidate is required to participate in an appropriate Research Seminar course and is expected to take a preliminary examination within the first year of his/her Ph.D. registration.

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

regulations in terms of supervision and progress—that welcomes a small number of students, both local and international, who hold a master’s degree and apply on the basis of their own research interests. Prospective applicants should consult the School’s website.

The School’s teaching and research activities, for both master’s and Ph.D. students, pertain primarily to community planning; environmental policy and planning; international development planning; land-use planning and regulation; transportation and infrastructure planning; 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.

The 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 to understand urban challenges and to formulate policies and plans to meet them. Community and professional partners are located in Montreal, in Québec, elsewhere in Canada, and in developing regions.

### 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 Québec, 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. Similar requirements must be met for admission to the American Institute of Certified Planners (AICP) and other such organizations.

The M.U.P. program was designed with a strong emphasis on project-based learning, i.e., practical work done in teams, in a studio setting. 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. Three studio courses, a summer internship, and a semester-long Supervised Research Project prepare them for professional practice and research. Students participate actively in professors’ research programs or define their own research objectives, sometimes with their own research funding from major agencies (e.g., SSHRC, NSERC, FQRSC, FQRNT).

The core program provides a general education in spatial planning in its functional, environmental, and social dimensions. A formal specialization is available in Transportation Planning. M.U.P. students in the core program may also participate in the Barbados Field Study Semester, which focuses on global environmental issues. Details concerning these concentrations are available at [www.tram.mcgill.ca](http://www.tram.mcgill.ca) and [www.mcgill.ca/bfss](http://www.mcgill.ca/bfss) respectively. Students wishing to specialize in Urban Design, as in other subfields of planning, can do so within the core program. A number of electives, the summer internship, and the Supervised Research Project together allow for over a year’s worth of 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.

### Ph.D. (*Ad Hoc*)

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 enables 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 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

### 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 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. By the Dates for Guaranteed Consideration, 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. The minimum requirement for the TOEFL test is as follows: PBT – 600, iBT – 100, with each component score not less than 23. The minimum score for the IELTS test is 7.0.

### 11.7.3.2 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).

### Awards and Financial Assistance

The School offers several fellowships and supports student applications to external grants from provincial and federal agencies. For information regarding awards and financial assistance, please refer to the *Graduate Fellowships and Awards Calendar* available at [www.mcgill.ca/students/courses/calendars](http://www.mcgill.ca/students/courses/calendars).

### 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

## 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. Col.) (*joint appt. with McGill School of Environment*)

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

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

Raphaël Fischler; B.Eng.(Eindhoven), M.Sc., M.C.P.(MIT), Ph.D.(Calif., Berk.)

### Assistant Professors

Ahmed Elgeneidy; B.A.A., M.Arch.(Alexandria), Ph.D.(Port. St.)

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

### Adjunct Professors

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

Murtaza Haider; B.Sc.(NWFP UET-Pesh.), 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.)

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

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

Alain Trudeau; B.Sc.(UQAM), M.U.P.(McG.)

## Guest Lecturers

Heather Braiden, Paul LeCavalier, Denis Lévesque, James McGregor, Pierre Morissette, Larry Sherman, Martin Wexler

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

The M.U.P. requires two years of study including a three-month internship with a member of a recognized planning association.

#### 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 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 628	(6)	Practical Experience
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#### Complementary Courses

12-18 credits

In choosing courses from the following list, students are encouraged to complete at least one course in each of the four areas of design, environment, housing, and transportation.

ARCH 515	(3)	Sustainable Design
ARCH 520	(3)	Montreal: Urban Morphology
ARCH 521	(3)	Structure of Cities
ARCH 527	(3)	Civic Design
ARCH 528	(3)	History of Housing
ARCH 529	(3)	Housing Theory
CIVE 540	(3)	Urban Transportation Planning
CIVE 561	(3)	Urban Activity, Air Pollution, and Health
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 507*	(3)	Planning and Infrastructure
URBP 519*	(6)	Sustainable Development Plans
URBP 520*	(3)	Globalization: Planning and Change

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 602	(3)	Urban Design Seminar 1: Foundations
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	(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
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.

### **Master of Urban Planning (M.U.P)**





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

### 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

