



**Faculty of Engineering, including Peter Guo-hua
Fu School of Architecture and School of Urban
Planning (Graduate)
Programs, Courses and University Regulations
2022-2023**

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

1 . McGill University reserves the right to mak

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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	Graduate and Postdoctoral Studies' Mission, page 9
3	Important Dates, page 9
4	Graduate Studies at a Glance, page 10
5	Program Requirements, page 10
6	Graduate Admissions and Application Procedures, page 10
7	Fellowships, Awards, and Assistantships, page 10
8	Postdoctoral Research, page 10
8.1	Postdocs, page 10
8.2	Guidelines and Policy for Academic Units on Postdoctoral Education, page 11
8.3	Vacation Policy for Postdocs, page 12
8.4	Leave of Absence for Health and Parental/Familial Reasons, page 12
8.5	Postdoctoral Research Trainees, page 13
9	Graduate Studies Guidelines and Policies, page 13
10	Graduate Student Services and Information, page 13
11	Information on Research Policies and Guidelines, Patents, Postdocs, Associates, Trainees, page 14
12	Browse Academic Units & Programs, page 14
12.1	Architecture, page 14
12.1.1	Location, page 14
12.1.2	About Peter Guo-hua Fu School of Architecture, page 14
12.1.3	Architecture Admission Requirements and Application Procedures, page 15
12.1.3.1	Admission Requirements, page 15
12.1.3.2	Application Procedures, page 15
12.1.3.3	Application Dates and Deadlines, page 16
12.1.4	Architecture Faculty, page 17
12.1.5	Master of Architecture (M.Arch.) Professional (Non-Thesis) (60 credits) , page 18
12.1.6	Doctor of Philosophy (Ph.D.) in Architecture , page 19
12.2	Bioengineering(12.1.4)Tj1 0 y32 u 490.682 TmG 165.364 373.7126bchitecture F

-
- 12.3.3.2 Application Procedure, page 22
 - 12.3.3.3 Application Dates Deadlines, page 22
 - 12.3.4 Chemical Engineering Faculty, page 23
 - 12.3.5 Master of Science (M.Sc.) Chemical Engineering (Thesis) (45 credits) , page 23
 - 12.3.6 Master of Engineering (M.Eng.) Chemical Engineering (Non-Thesis) (45 credits) , page 24
 - 12.3.7 Master of Engineering (M.Eng.) Chemical Engineering (Non-Thesis): Environmental Engineering (45 credits) , page 24
 - 12.3.8 Doctor of Philosophy (Ph.D.) Chemical Engineering , page 25
 - 12.4 Civil Engineering, page 26
 - 12.4.1 Location, page 26
 - 12.4.2 About Civil Engineering, page 26
 - 12.4.3 Civil Engineering Admission Requirements and Application Procedures, page 27
 - 12.4.3.1 Admission Requirements, page 27
 - 12.4.3.2 Application Procedures, page 27
 - 12.4.3.3 Application Dates and Deadlines, page 27
 - 12.4.4 Civil Engineering Faculty, page 27
 - 12.4.5 Master of Science (M.Sc.) Civil Engineering (Thesis) (45 credits) , page 28
 - 12.4.6 Master of Engineering (M.Eng.) Civil Engineering (Non-Thesis): Environmental Engineering (45 credits) , page 28
 - 12.4.7 Master of Engineering (M.Eng.) Civil Engineering (Non-Thesis) (45 credits) , page 29
 - 12.4.8 Doctor of Philosophy (Ph.D.) Civil Engineering , page 31
 - 12.5 Electrical and Computer Engineering, page 31
 - 12.5.1 Location, page 31
 - 12.5.2 About Electrical and Computer Engineering, page 32
 - 12.5.3 Electrical and Computer Engineering Admission Requirements and Application Procedures, page 33
 - 12.5.3.1 Admission Requirements, page 33
 - 12.5.3.2 Application Procedures, page 33
 - 12.5.3.3 Application Dates and Deadlines, page 34
 - 12.5.4 Electrical and Computer Engineering Faculty, page 34
 - 12.5.5 Master of Science (M.Sc.) Electrical Engineering (Thesis) (45 credits) , page 35
 - 12.5.6 Master of Engineering (M.Eng.) Electrical Engineering (Non-Thesis) (45 credits) , page 35
 - 12.5.7 Doctor of Philosophy (Ph.D.) Electrical Engineering , page 36
 - 12.6 Mechanical Engineering, page 36
 - 12.6.1 Location, page 36
 - 12.6.2 About Mechanical Engineering, page 36
 - 12.6.3 Mechanical Engineering Admission Requirements and Application Procedures, page 38
 - 12.6.3.1 Admission Requirements, page 38
 - 12.6.3.2 Application Procedures, page 38
 - 12.6.3.3 Application Dates and Deadlines, page 38
 - 12.6.4 Mechanical Engineering Faculty, page 39
 - 12.6.5 Master of Engineering (M.Eng.) Mechanical Engineering (Non-Thesis) (45 credits) , page 39

- 12.6.6 Master of Engineering (M.Eng.) Aerospace Engineering (Non-Thesis) (45 credits) , page 40
- 12.6.7 Master of Science (M.Sc.) Mechanical Engineering (Thesis) (45 credits) , page 40
- 12.6.8 Doctor of Philosophy (Ph.D.) Mechanical Engineering , page 41
- 12.7 Mining and Materials Engineering, page 41
 - 12.7.1 Location, page 41
 - 12.7.2 About Mining and Materials Engineering, page 41
 - 12.7.3 Mining and Materials Engineering Admission Requirements and Application Procedures, page 43
 - 12.7.3.1 Admission Requirements, page 43
 - 12.7.3.2 Application Procedures, page 43
 - 12.7.3.3 Application Dates and Deadlines, page 43
 - 12.7.4 Mining and Materials Engineering Faculty, page 44
 - 12.7.5 Master of Science (M.Sc.) Materials Engineering (Thesis) (45 credits) , page 44
 - 12.7.6 Master of Science (M.Sc.) Mining Engineering (Thesis) (45 credits) , page 45
 - 12.7.7 Master of Engineering (M.Eng.) Materials Engineering (Non-Thesis) (45 credits) , page 45
 - 12.7.8 Master of Engineering (M.Eng.) Materials Engineering (Non-Thesis): Environmental Engineering (45 credits) , page 46
 - 12.7.9 Master of Engineering (M.Eng.) Mining Engineering (Non-Thesis) (45 credits) , page 47
 - 12.7.10 Master of Engineering (M.Eng.) Mining Engineering (Non-Thesis): Environmental Engineering (45 credits) , page 47
 - 12.7.11 Doctor of Philosophy (Ph.D.) Materials Engineering , page 49
 - 12.7.12 Doctor of Philosophy (Ph.D.) Mining Engineering , page 49
 - 12.7.13 Graduate Diploma (Gr. Dip.) Mining Engineering (30 credits) , page 50
- 12.8 Urban Planning, page 50
 - 12.8.1 Location, page 50
 - 12.8.2 About Urban Planning, page 80 1 353.52 206.612 Tm3ge 2s612 Tm3ge page (5A/o1e02e) ,
 - 12.8.3 Urban Planning Admission Requirements and Application Procedures, page 51
 - 12.8.3.1 Application Procedures, page 51
 - 12.8.3.2 Application Dates and Deadlines, page 52
 - 12.8.4 Urban Planning Faculty, page 52
 - 12.8.5 Master of Science (M.Sc.) Urban Planning, Policy and Design (Thesis) (45 credits) , page 53
 - 12.8.6 Master of Urban Planning (M.U.P.) Urban Planning (Non-Thesis) (60 credits) , page 54
 - 12.8.7 Master of Urban Planning (M.U.P.) Urban Planning (Non-Thesis): Transportation Planning (60 credits) , page 55
 - 12.8

1 Dean's Welcome

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

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

Josephine Nalbantoglu, Ph.D.

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

2 Graduate and Postdoctoral Studies

2.1 Administrative Officers

Administrative Officers

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

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

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

Associate Dean (Graduate and Postdoctoral Studies)

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

Associate Dean (Graduate and Postdoctoral Studies)

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

Associate Dean (Graduate and Postdoctoral Studies)

2.2 Location

James Administration Building, Room 400

845 Sherbrooke Street West

Montreal QC H3A 0G4

Website: mcgill.ca/gps



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

2.3 Graduate and Postdoctoral Studies' Mission

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

3 Important Dates

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

4 Graduate Studies at a Glance

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

5 Program Requirements

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

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

6 Graduate Admissions and Application Procedures

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

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

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

7 Fellowships, Awards, and Assistantships

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

8 Postdoctoral Research

Students must inform themselves of University rules and regulations and keep abreast of any changes that may occur. The *P*

8.2 Guidelines and Policy for Academic Units on Postdoctoral Education

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

1. Definition and Status

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

2. Registration

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

3. A

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

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

8.3 Vacation Policy for Postdocs

Please refer to the : [Vacation Policy for Graduate Students and Postdocs](#).

8.4 Leave of Absence for Health and Parental/Familial Reasons

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

Such a leave must be requested on a term-by-term basis and may be granted for a period of up to 52 weeks. For a maternity or parental leave, the eligibility basis and basis of assessment are as follows:

8.5 Postdoctoral Research Trainees

Eligibility

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

The category of Postdoctoral Research Trainee is for:

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

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

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

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



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

General Conditions

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

9 Graduate Studies Guidelines and Policies

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

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

10 Graduate Student Services and Information

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

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

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

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

- Regulations on Research Policy
- Regulations Concerning the Investigation of Research Misconduct
- Requirements for Research Involving Human Participants
- Policy on the Study and Care of

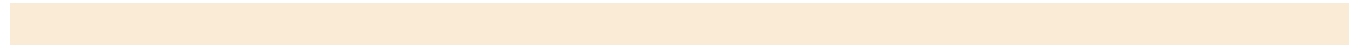
The **Ph.D. program** is for study beyond the professional degree in architecture. The program has been conceived to respond to the needs of graduates with some professional experience who wish to acquire more specialized knowledge in architecture. Information concerning the Ph.D. program, the duration of all programs offered, documents required of applicants, etc., may be obtained at mcgill.ca/architecture.

Architectural Certification in Canada

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

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

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





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

- Curriculum Vitae
- Applicants are required to upload unofficial transcripts from all universities previously attended (including summer term, exchange term, or study-away term). If you are recommended for admission, you will later be required to supply official transcripts. Transcripts in languages other than English or French must be accompanied by an English or French translation provided by the institution issuing the transcript or by a certified translator. Please refer to mcgill.ca/gradapplicants/apply/ready/submit/upload and mcgill.ca/gradapplicants/apply/prepare/checklist/documents.
- A total of two (2) confidential letters of reference are required for your application: two (2) from academics **or** one (1) from an academic and one (1) from a recent employer. Once you have identified your referees (you must provide a valid institutional email address for each referee), McGill will send them an email asking for a reference in support of your application. Additionally, uploaded letters must be on university or company/business stationery

Application Opening Dates		Application Deadlines			
	All Applicants	Non-Canadian citizens	Canadian citizens/Perm. residents of Canada	Current McGill Students (any citizenship)	Special, Visiting & Exchange
Fall Term:	Sept. 15	- Dec. 15 (M.Arch. Professional) - Jan. 15 (Ph.D.)	- Dec. 15 (M.Arch. Professional) - Jan. 15 (Ph.D.)	- Dec. 15 (M.Arch. Professional) - Jan. 15 (Ph.D.)	May 1 (M.Arch.(Professional) only)
Winter Term:	Feb. 15	N/A	N/A	N/A	Sept. 1 (M.Arch.(Professional) only)
Summer Term:	N/A	N/A	N/A	N/A	N/A

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



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

12.1.4 Architecture Faculty

Director

David Theodore

Undergraduate Program Director

David Covo

Graduate Program Director

Theodora Vardouli

Emeritus Professors

Bruce Anderson; Vikram Bhatt; Derek Drummond; Alberto Pérez-Gómez; Adrian Sheppard; Radoslav Zuk.

Associate Professors (Post-Retirement)

Ricardo L. Castro; Robert Mellin; Alberto Pérez-Gómez; Pieter Sijpkens.

Professors

Annmarie Adams; Martin Bressani; Avi Friedman.

Associate Professors

David Covo; Michael Jemtrud; Nik Luka; David Theodore; Ipek Türeli.

Assistant Professors

Salmaan Craig; Naomi Keena; Philip Tidwell; Theodora Vardouli.

Professors of Practice

Howard Davies; Peter Guo-hua Fu; Julia Gersovitz; Andrew King.

Adjunct Professor

Conor Sampson

Course Lecturers

Vedanta Balbahadur, Evelyne Bouchard, Morgan Carter, Nancy Dunton, Tom Egli, Aniel Guxholli, Charles Gregoire, Olga Karpova, Shane Laptiste, Daniela Leon, Julia Manacas, Sybil McKenna, Ipek Mehmeto lu, Samiha Meem, Marc-André Plourde, Cailen Pybus, Sophie Robitaille, Rebecca Taylor, Jennifer Thorogood.

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

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

Required Courses (42 credits)

ARCH 672	(9)	Architectural Design Studio 1
ARCH 673	(9)	Architectural Design Studio 2
ARCH 674	(3)	Professional Practice 1
ARCH 676	(9)	Advanced Architectural Design
ARCH 678	(3)	Advanced Construction
ARCH 683	(9)	Directed Research Project

Complementary Courses (18 credits)

18 credits chosen from among the following:

ARCH 514	(3)	Community Design Workshop
ARCH 515	(3)	Sustainable Design
ARCH 517	(3)	Sustainable Residential Development
ARCH 525	(3)	Seminar on Analysis and Theory
ARCH 528	(3)	History of Housing
ARCH 531	(3)	Architectural Intentions Vitruvius - Renaissance
ARCH 532	(3)	Origins of Modern Architecture
ARCH 535	(3)	History of Architecture in Canada
ARCH 536	(3)	Heritage Conservation
ARCH 540	(3)	Selected Topics in Architecture 1
ARCH 541	(3)	Selected Topics in Architecture 2
ARCH 542	(3)	Selected Topics in Architecture 3
ARCH 543	(3)	Selected Topics in Architecture 4
ARCH 604	(3)	Urban Design Seminar
ARCH 627	(3)	Research Methods
ARCH 641	(3)	Energy and Environments 1
ARCH 642	(3)	Energy and Environments 2
ARCH 670	(3)	Advanced Landscape Theory
ARCH 675	(3)	Architecture in Global Perspective
ARCH 680	(2)	Field Sketching
ARCH 684	(3)	Contemporary Theory 1
ARCH 685	(3)	Contemporary Theory 2
ARCH 688	(3)	Directed Research 1
ARCH 689	(3)	Directed Research 2
OCC1 625	(3)	Functional Environments
URBP 555	(3)	Real Estate and Planning
URBP 651	(3)	Redesigning Suburban Space

12.1.6 Doctor of Philosophy (Ph.D.) Architecture

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

Thesis

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

Required Courses (15 credits)

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

and Biomedical Engineering is a broad, interdisciplinary field that involves the application of engineering, the physical sciences, biological sciences, and computer science to medicine and the life sciences. McGill's BBME programs offer unsurpassed opportunities for multidisciplinary research with internationally-renowned scientists.

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

12.2.4 Bioengineering Faculty

Chair

Dan V. Nicolau

Professors

Dan V. Nicolau; Amine Kamen; Sebastian Wachsmann-Hogiu; Yu (Brandon) Xia.

Associate Professors

Allen Ehrlicher; Adam Hendricks; J. Matt Kinsella; Georgios Mitsis.

Assistant Professors

Codruta Ignea; Sara Mahshid; 31 otaf5er R3znik1 0 0 1 215.51 T4r

- biomaterials for applications such as artificial implants;
- products such as bacteriophages for alternative treatment techniques.

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

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

Environmental engineering – Environmental engineering is the application of science and engineering principles to protect the environment and remediate contaminated sites. Chemical and environmental engineers develop and design processes to provide healthy air, water, and soil. They also develop green products and sustainable processes. Using their background in process engineering, environmental chemistry, earth sciences, and biology, engineers hav

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

under the supervision of a Faculty member (professor). Graduate students can specialize in environmental engineering through this program offered in collaboration with the Bieler School of Environment.

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

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

12.3.3 Chemical Engineering Admission Requirements and Application Procedures

12.3.3.1 Admission Requirements

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

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

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

Ph.D.

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

12.3.3.2 Application Procedure

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

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

12.3.3.2.1 Additional Requirements

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

12.3.3.3 Application Dates Deadlines

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

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

Admission to graduate studies is competitive; accordingly

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

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

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

Research Project

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

6 credits must include the following course:

CHEE 695	(6)	Project in Chemical Engineering
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Complementary Courses

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

9 credits must be in an area of concentration.

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

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

This program is currently not accepting applicants.

Research Project (6 credits)

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

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

Complementary Courses (22 credits)

Minimum of 22 credits

Data analysis course: (3 credits)

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

Toxicology: (3 credits)

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

Water pollution engineering: (4 credits)

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

Air pollution engineering: (3 credits)

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

Soil and water quality management: (3 credits)

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

Environmental impact: (3 credits)

GEOG 601	(3)	Advanced Environmental Systems Modelling
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or an approved 500-, 600-, or 700-level alternative.

Environmental policy: (3 credits)

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

Elective Courses (11 credits)

CHEE 696	(6)	Extended Project
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or another Engineering or non-Engineering 500-, 600-, or 700-level course subject to approval.

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

The Ph.D. in Chemical Engineering focuses on advanced materials and polymers, biomedical engineering and biotechnology, environmental engineering, energy, plasma science and artificial intelligence-assisted design and optimization. The program offers advanced training in fundamentals as well as research methods and techniques, laboratory safety and research ethics.

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 (4 credits)

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

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
CHEE 688	(4)	Advanced Materials in Chemical Engineering

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12.4 Civil Engineering

12.4.1 Location

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

12.4.2 About Civil Engineering

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

12.4.3 Civil Engineering Admission Requirements and Application Procedures

12.4.3.1 Admission Requirements

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

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

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

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

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

The GRE is not required but is highly recommended.

12.4.3.2 Application Procedures

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

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

12.4.3.3 Application Dates and Deadlines

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

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

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



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

12.4.4 Civil Engineering Faculty

Chair

Colin Rogers, *Acting Chair* (Mohamed A. Meguid, *on sabbatical*)

Associate Chair

Student Affairs: Jinxia Liu

Emeritus Professors

M. Saeed Mirza; Ghyslaine McClure; Denis Mitchell, Yixin Shao, Suresh C Shrivastava.

Professors

Vincent H. Chu; Luc E. Chouinard; Susan J. Gaskin; Subhasis Ghoshal; Mohamed A. Meguid (*on sabbatical*); Van-Thanh-Van Nguyen; James Nicell; Colin Rogers; A. Patrick S. Selvadurai; Laxmi Sushama.

Associate Professors

Infrastructure Stream

CIVE 512	(3)	Advanced Civil Engineering Materials
CIVE 602	(4)	Finite Element Analysis
CIVE 603	(4)	Structural Dynamics
CIVE 609	(4)	Risk Engineering
CIVE 623	(4)	Durability of Construction Materials

Environmental/Hydraulics-Water Resources

CIVE 555	(3)	Environmental Data Analysis
CIVE 572	(3)	Computational Hydraulics
CIVE 584	(3)	Mechanics of Groundwater Flow
CIVE 651	(4)	Theory: Water / Wastewater Treatment
CIVE 677	(4)	Water-Energy Sustainability

Transportation

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

List B: Other Complementary Courses from the Department

0-30 credits

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

CIVE 520	(3)	Groundwater Hydrology
CIVE 521	(3)	Nanomaterials and the Aquatic Environment
CIVE 527	(3)	Renovation and Preservation: Infrastructure
CIVE 550	(3)	Water Resources Management
CIVE 551	(3)	Environmental Transport Processes
CIVE 557	(3)	Microbiology for Environmental Engineering
CIVE 558	(3)	Biomolecular Techniques for Environmental Engineering
CIVE 561	(3)	Greenhouse Gas Emissions
CIVE 573	(3)	Hydraulic Structures
CIVE 574	(3)	Fluid Mechanics of Water Pollution
CIVE 577	(3)	River Engineering
CIVE 604	(4)	Theory of Plates and Shells
CIVE 605	(4)	Stability of Structures
CIVE 607	(4)	Advanced Design in Steel
CIVE 612	(4)	Earthquake-Resistant Design
CIVE 614	(4)	Composites for Construction
CIVE 615	(3)	Environmental Engineering Seminar
CIVE 616	(4)	Nonlinear Structural Analysis for Buildings
CIVE 617	(4)	Bridge Engineering

(4)

Design in Concrete 1

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

12.5.2 About Electrical and Computer Engineering

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

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

- Bioelectrical Engineering;
- Telecommunications and Signal Processing;
- Systems and Control;
- Integrated Circuits and Systems;
- Nano-Electronic Devices and Materials;
- Photonic Systems;
- Computational Electromagnetics;
- Power Engineering;
- Intelligent Systems;
- Software Engineering.

The Department is equipped with state-of-the-art experimental laboratories and there are numerous multidisciplinary research projects, so students are provided with an ideal environment to de

by the professor from whose grant the assistantship is paid. A good part, but not necessarily all, of this work can be used for preparing a thesis. There is no special application form for graduate assistantships; all applicants who indicate a need for support on their application forms will be considered.

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

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

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

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

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

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

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

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

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

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

12.5.3 Electrical and Computer Engineering Admission Requirements and Application Procedures

12.5.3.1 Admission Requirements

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

GRE: Submission of [GRE](http://mcgill.ca/gps) (General Aptitude Test) scores is not mandatory. Applicants who have written the GRE are welcome to submit their scores for consideration.

Master's Degree (Admission Requirements)

The applicant must be the graduate of a recognized university and hold a bachelor's degree or its equivalent, as determined by McGill, in Electrical, Computer

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

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

12.5.3.2.1 Additional Requirements

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

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

12.5.3.3 Application Dates and Deadlines

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

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

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

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

12.5.4 Electrical and Computer Engineering Faculty

Chair
Warren Gross
Associate Chair, Academic
Ioannis Psaromiligkos
Associate Chair, Undergraduate Programs
François Bouffard
Associate Chair, Graduate Programs
Odile Liboiron-Ladouceur
Associate Chair, Operations
Dennis Giannacopoulos
Emeritus Professors
Pierre R. Bélanger; Maier L. Blostein; Peter Kabal; Martin D. Levine; Boon-Teck Ooi; Tomas J.F. Pavlasek; Nicholas C. Rumin; Jonathan P. Webb.
Professors
Tal Arbel; Benoit Boulet; Peter E. Caines; Benoit Champagne; Lawrence Chen; James Clark; Mark Coates; Jeremy R. Cooperstock; Frank Ferrie; Warren Gross; Geza Joos; Andrew G. Kirk; Fabrice Labeau; Harry Leib; Tho Le-Ngoc; David A. Lowther; David V. Plant; Gordon Roberts; Martin Rochette; Thomas Szkopek; Dániel Varró; Zeljko Zilic.
Associate Professors
François Bouffard; Christophe Dubach; Mourad El-Gamal; Dennis Giannacopoulos; Roni Khazaka; Odile Liboiron-Ladouceur; Aditya Mahajan; Muthucumaru Maheswaran; Brett Meyer; Hannah Michalska; Gunter Mussbacher; Derek Nowrouzezahrai; Milica Popovich; Ioannis Psaromiligkos.

Assistant Professors

Narges Armanfard; Sharmistha Bhadra; Amin Emad; Hsiu-Chin Lin; AJung Moon; Boris Vaisband; Xiaozhe Wang; Songrui Zhao; Wei Lili.

Faculty Lecturer

Marwan Kanaan

Associate Members

Maxime Cohen; Matthew Adam Dobbs; Gregory L. Dudek; Alan C. Evans; William R. Funnell; David Juncker; Paul Kry; Samira A. Rahimi.

Adjunct Professors

Rhys Allan Adams; Donald Davis; Tiago H. Falk; Innocent Kamwa; Marthe Kassouf; Shane McIntosh; Zetian Mi; Frédéric Nabki; Douglas O'Shaughnessy; Michael Rabbat; Joseph J. Schlesinger; Di Wu; Qunbi Zhuge.

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

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

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

Thesis Courses (27 credits)

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

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

Complementary Courses (18 credits)

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

* Non-departmental courses require Departmental approval. Students may be allowed to take more than 6 credits of non-Departmental courses; 16ya.6 credits of nNm(w

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

Complementary Courses (27 credits)

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

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

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

Thesis

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

Required Courses

Ph.D. Qualifyresemu9%ad7resemu9 adv

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

Aerodynamics and fluid mechanics

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

Biomechanics

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

Combustion and energy systems

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

Design and manufacturing

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

Dynamics and control

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

Materials and structures

Composite materials: structural design, analysis, manuf

Required Courses (16 credits)

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

Complementary Courses (16 credits)

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

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

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

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

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

Required Courses (9 credits)

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

Complementary Courses (36 credits)

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

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

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

Thesis Courses (28 credits)

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

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

Required Course

1 credit:

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

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

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

Candidates normally register for the M.Eng. degree in the first instance. However, in exceptional cases where the research work is proceeding very satisf

- Environmental Engineering

Materials Engineering

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

Research Degrees

section 12.7.5: Master of Science (M.Sc.) Materials Engineering (Thesis) (45 credits)

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

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

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

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

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

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

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

M.Eng. (Project) Degrees

section 12.7.7: Master of Engineering (M.Eng.) Materials Engineering (Non-Thesis) (45 credits)

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

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

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

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

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

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

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

section 12.7.11: Doctor of Philosophy (Ph.D.) Materials Engineering

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

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

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

section 12.7.13: Graduate Diploma (Gr. Dip.) Mining Engineering (30 credits)

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

12.7.3 Mining and Materials Engineering Admission Requirements and Application Procedures

12.7.3.1 Admission Requirements

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

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

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

The **Master of Engineering (Project) (Mining option)**

12.7.4 Mining and Materials Engineering Faculty

Department Chair

Richard Chromik

Associate Chair, Materials Engineering

Jun Song

Associate Chair & Graduate Program Director

Mathieu Brochu

Graduate Program Coordinator

Barbara Hanley

Emeritus Professors

James A. Finch; John E. Gruzleski; John J. Jonas; Gordon W. Smith.

Professors

Marta Cerruti; Richard Chromik; George P. Demopoulos; Roussos Dimitrak

MIME 694	(6)	Thesis Research 5
MIME 695	(3)	Thesis Research 6

Required Courses (9 credits)

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

Complementary Courses (9 credits)

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

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

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

Thesis Courses (27 credits)

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

Required Courses (6 credits)

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

MIME 673	(6)	Mining Engineering Seminar
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Complementary Courses (12 credits)

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

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

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

Research Project (15 credits)

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

Required Courses (6 credits)

MIME 601	(0)	Engineering Laboratory Practice
MIME 670	(6)	Research Seminar 1

Complementary Courses (24 credits)

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

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

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

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

Research Project (6 credits)

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

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

Complementary Courses (22 credits)

(minimum 22 credits)

Data Analysis Course

One of the following courses:

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

Toxicology Course

One of the following courses:

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

Water Pollution Engineering Course

One of the following courses:

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

Air Pollution Engineering Course

One of the following courses:

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

Soil and Water Quality Management Course

One of the following courses:

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

Environmental Impact Course

One of the following courses:

GEOG 601	(3)	Advanced Environmental Systems Modelling
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or an approved 500-, 600-, or 700-level alternative.

Environmental Policy Course

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

Elective Courses (11 credits)

(minimum 11 credits)

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

The relevant Project course in Materials Engineering is the following:

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

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

Research Project (15 credits)

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

Required Courses (6 credits)

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

Complementary (24 credits)

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

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

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

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

Research Project (6 credits)

MIME 628	(6)	Mineral Engineering Project 1
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Required Courses (6 credits)

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

Complementary Courses (22 credits)

(minimum 22 credits)

Data Analysis Course

3 credits from the following:

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

Toxicology Course

3 credits from the following:

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

Water Pollution Engineering Course

4 credits from the following:

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

Air Pollution Engineering Course

3 credits from the following:

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

Soil and Water Quality Management Course

3-4 credits from the following:

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

Environmental Impact Course

3 credits from the following:

GEOG 601	(3)	Advanced Environmental Systems Modelling
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or an approved 500-, 600-, or 700-level alternative.

Environmental Policy Course

3 credits from the following:

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

Elective Courses (10-11 credits)

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

The relevant Project course in Mining Engineering is the following:

MIME 629	(6)	Mineral Engineering Project 2
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12.7.11 Doctor of Philosophy (Ph.D.) Materials Engineering

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

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

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

Thesis

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

Required Courses (9 credits)

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

Complementary Courses (6 credits)

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

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

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

Thesis

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

Required Courses (6 credits)

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

Complementary Courses (6 credits)

6 credits of courses at the 500 lev

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

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

section 12.8.5: Master of Science (M.Sc.) Urban Planning, Policy and Design (Thesis) (45 credits)

The M.Sc. in Urban Planning, Policy and Design (Thesis) is centred on an independent research thesis. Original research on an urban issue of interest with implications for planning, policy or design will be conducted. The program focuses on critical skills in research, analysis and interpretation that are applicable in both academia and practice.

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

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

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

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

section 12.8.8: Master of Urban Planning (M.U.P.) Urban Planning (Non-Thesis): Urban Development and Urban Design (60 credits)

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

section 12.8.9: Doctor of Philosophy (Ph.D.) Urban Planning, Policy and Design

The Ph.D. in Urban Planning, Policy and Design prepares students for advanced research and teaching on the processes that govern the management, development, and evolution of towns and cities. During the first two years, under their supervisor's and advisory committee's guidance, students follow courses, refine their research topic, and e

or francophone). By the application deadline for the program, appropriate exam results must be sent electronically directly from the [TOEFL](#) (Test of English as a Foreign Language) or [IELTS](#) (International English Language Testing Systems) Office (Note: McGill's Institutional Code is 0935). The minimum requirement for the TOEFL is a score of 100 on the Internet-based test (iBT), with each component score not less than 23. The minimum score for the IELTS test is 7.0, with a score of at least 6.5 for each component.

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

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

Awards and Financial Assistance

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

12.8.3.2 Application Dates and Deadlines

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

Application Opening Dates	Application Deadlines
	Canadian citizens/PThe tw Current McGill Students (any citizenship)

Assistant Professor

Anna Kramer

Adjunct Professors

Suzanne Doucet; Jayne Engle; Gorka Espiau; Nilson Espino; Murtaza Haider; Marc-André LeChasseur; Mario Polèse; Ray Tomalty.

Associate Members

Kevin Manaugh; Sarah Moser.

12.8.5 Master of Science (M.Sc.) Urban Planning, Policy and Design (Thesis) (45 credits)

The M.Sc. in Urban Planning, Policy and Design (Thesis) is centred on an independent research thesis. Original research on an urban issue of interest with implications for planning, policy or design will be conducted. The program focuses on critical skills in research, analysis and interpretation that are applicable in both academia and practice.

Required Courses (27 credits)

URBP 606D1	(3)	Research Seminar
URBP 606D2	(3)	Research Seminar
URBP 612	(3)	History and Theory of Planning
URBP 690	(18)	Thesis Submission

Complementary Courses (12 credits)

3 credits selected from the following research methods courses:

URBP 505	(3)	Geographic Information Systems
URBP 608	(3)	Advanced GIS Applications
URBP 633	(3)	Research Methods for Planners
URBP 640	(1)	Introduction to Planning Statistics
URBP 641	(1)	Reading the Urban Landscape
URBP 642	(1)	Introduction to Planning Data
URBP 643	(1)	Introduction to Geographic Information Systems
URBP 644	(1)	Multivariate Statistics
URBP 645	(1)	Social Research Methods 1
URBP 646	(1)	Social Research Methods 2
URBP 647	(1)	Selected Methods in Planning 1
URBP 648	(1)	Selected Methods in Planning 2

Note: Students may also take research methods courses at the 500 or 600 level in other academic units at McGill or another Montreal university, subject to the appro

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

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

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

Required Courses (42 credits)

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

Complementary Courses (18 credits)

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

Group A

1-3 credits from the following:

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

Group B

9-17 credits from the following:

ARCH 515	(3)	Sustainable Design
CIVE 540	(3)	Urban Transportation Planning
CIVE 561	(3)	Greenhouse Gas Emissions
GEOG 504	(3)	Advanced Economic Geography
GEOG 525	(3)	Asian Cities in the 21st Century
URBP 501	(2)	Principles and Practice 1
URBP 503	(3)	Public Transport: Planning and Operations
URBP 504	(3)	Planning for Active Transportation
URBP 506	(3)	Environmental Policy and Planning
		Community Design W4P 506

URBP 536	(2)	Current Issues in Transportation 1
URBP 537	(2)	Current Issues in Transportation 2
URBP 541	(1)	Selected Topics in Planning
URBP 542	(1)	Selected Topics in Visual Analysis
URBP 543	(3)	Special Topics
URBP 553	(3)	Urban Governance
URBP 555	(3)	Real Estate and Planning
URBP 556	(3)	Urban Economy: A Spatial Perspective
URBP 557	(3)	Rethinking Zoning
URBP 604	(3)	Urban Design Seminar
URBP 607	(3)	Reading Course: Urban Planning
URBP 608	(3)	Advanced GIS Applications
URBP 616	(3)	Selected Topics 1
URBP 617	(3)	Selected Topics 2
URBP 618	(3)	Selected Topics 3
URBP 619	(4)	Land Use and Transport Planning
URBP 620	(4)	Transport Economics
URBP 625	(2)	Principles and Practice 2
URBP 626	(2)	Principles and Practice 3
URBP 629	(3)	Planning Theory and Practice in a Globalizing World
URBP 644	(1)	Multivariate Statistics
URBP 645	(1)	Social Research Methods 1
URBP 646	(1)	Social Research Methods 2
URBP 647	(1)	Selected Methods in Planning 1
URBP 648	(1)	Selected Methods in Planning 2
URBP 649	(1)	Visual and Spatial Methods
URBP 651	(3)	Redesigning Suburban Space
URBP 656	(3)	Urban Innovation and Creativity

Group C

0-8 credits from the following:

Students may take 0-8 credits of coursework offered at the 500 or 600 levels by any academic unit at McGill or at another Montreal university, with the approval of the School, if they help students to develop an in-depth knowledge of one or more subject areas in the field of planning, with the approval of the School. Choices usually include courses in real-estate analysis, urban geography, sociology, anthropology, law, politics, and environmental science. Students must confirm prior to registration that the selected course(s) can be counted toward the M.U.P. degree.

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

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

Required Courses (49 credits)

URBP 505	(3)	Geographic Information Systems
URBP 609	(1)	Planning Graphics 1
URBP 610	(1)	Planning Graphics 2

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

Complementary Courses (11 credits)

Group A

5-11 credits from the following:

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

Group B

0-6 credits

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

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

The concentration in Urban Development and Urban Design aims to produce graduates who are skilled in analysis and design for development in existing (sub)urban landscapes and urbanizing contexts, whether in North America or elsewhere. A series of courses on urban design, real estate, the politics of development, and urban governance enhance the core curriculum of the professionally-accredited M.U.P. program. Additional courses address innovative

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

Complementary Courses (15 credits)

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

Group A (1 to 3 credits)

1-3 credits from the following:

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

Group B (9 to 14 credits)

(9-14 credits)

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

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

Group C (0-5 credits)

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

ARCH 515	(3)	Sustainable Design
GEOG 525	(3)	Asian Cities in the 21st Century
URBP 501	(2)	Principles and Practice 1
URBP 503	(3)	Public Transport: Planning and Operations
URBP 504	(3)	Planning for Active Transportation

URBP 506	(3)	Environmental Policy and Planning
URBP 514	(4)	Community Design Workshop
URBP 530	(3)	Urban Infrastructure and Services in International Context
URBP 541	(1)	Selected Topics in Planning
URBP 542	(1)	Selected Topics in Visual Analysis
URBP 543	(3)	Special Topics
URBP 556	(3)	Urban Economy: A Spatial Perspective
URBP 607	(3)	Reading Course: Urban Planning
URBP 616	(3)	Selected Topics 1
URBP 617	(3)	Selected Topics 2
URBP 618	(3)	Selected Topics 3
URBP 619	(4)	Land Use and Transport Planning
URBP 625	(2)	Principles and Practice 2
URBP 626	(2)	Principles and Practice 3
URBP 644	(1)	Multivariate Statistics
URBP 645	(1)	Social Research Methods 1
URBP 646	(1)	Social Research Methods 2
URBP 647	(1)	Selected Methods in Planning 1
URBP 648	(1)	Selected Methods in Planning 2
URBP 649	(1)	Visual and Spatial Methods

Students may also take courses at the 500 or 600 level in an

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

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

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

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

