



## **Interfaculty Studies**

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

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- Coursework for Graduate Programs, Diplomas, and Certificates

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## 5 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 information regarding admissions and application procedures for Graduate and Postdoctoral Studies.

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## 6 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.

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## 7 Postdoctoral Research

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

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### 7.1 Postdocs

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

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

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### 7.2 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](http://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



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 7.3: Vacation Policy for Graduate Students and Postdocs](#) and [University Regulations & Resources](#) > Graduate > Regulations > Categories of Students > : *Leave of Absence Status*).

**3. A**

- to clarify expectations regarding intellectual property rights in accordance with the University’s policy;
- to provide mentorship for career development; and
- 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](http://mcgill.ca/gps/postdocs) and [mcgill.ca/students/srr](http://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; and
- 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.*

### 7.3 Vacation Policy for Postdocs

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

### 7.4 Leave of Absence for Health and Parental/Familial Reasons

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

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

Students who have been granted such a leave will have to register for the term(s) in question and their registration will show as “leave of absence” on their record. No tuition fees will be charged for the duration of the authorized leave. Research supervisors are not obligated to remunerate students and Postdocs on leave. A summary table of various leave policies (paid or unpaid) for students and Postdocs paid from the Federal and Quebec Councils throu procedure id9 1 pol 1 158

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.

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## 8 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

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

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

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

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

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## 11 Browse Academic Units & Programs

The programs and courses in the following sections have been approved for the 2024–2025 session as listed.

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### 11.1 Biological and Biomedical Engineering

#### 11.1.1 Location

Duff Medical Building  
3775 University Street, Room 316  
Montreal QC H3A 2B4  
Canada  
Website: [mcgill.ca/bbme](http://mcgill.ca/bbme)

#### 11.1.2 About Biological and Biomedical Engineering

Biological and Biomedical Engineering (BBME) is an interfaculty graduate program administered jointly by the Departments of Bioengineering (FacultyV

- biomolecular and cellular engineering
- bioprocess engineering
- micro- and nano-bioengineering
- systems and synthetic biology

requirements well in advance on the appropriate McGill departmental website; please consult the list at [mcgill.ca/gps/contact/graduate-program](http://mcgill.ca/gps/contact/graduate-program). For additional information, please consult [mcgill.ca/bbme/prospective-students/how-apply](http://mcgill.ca/bbme/prospective-students/how-apply).

Information on application deadlines is available at [mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines](http://mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines).

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

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

**Note for Non-Thesis Option:** Applications for Winter and Summer term admission will not be considered.

#### 11.1.4 Master of Science (M.Sc.) Biological and Biomedical Engineering (Thesis) (45 credits)

The Biological and Biomedical Engineering (BBME) Master's program focuses on the interdisciplinary application of methods, paradigms, technologies, and devices from engineering and the natural sciences to problems in biology, medicine, and the life sciences. With its unique multidisciplinary environment, and taking advantage of research collaborations between staff in the Faculties of Medicine, Science, and Engineering, BBME offers thesis-based graduate degrees (M.Sc.) that span broad themes in biomodelling, biosignal processing, medical imaging, nanotechnology, artificial cells and organs, probiotics, bioinformatics, bioengineering, biomaterials, and orthopaedics. BBME's internationally renowned staff provide frequent and stimulating interactions with physicians, scientists, and the biomedical industry. Through courses and thesis research, this program will prepare students for careers in industry, academia, hospitals and government and provide a solid basis for Ph.D. studies. Candidates should hold a bachelor's degree in engineering, science, or medicine with a strong emphasis on mathematics, physics, chemistry, and basic physiology or cell biology.

##### Thesis Courses (30 credits)

BBME 693	(6)	Thesis Research 1
BBME 694	(6)	Thesis Research 2
BBME 695	(12)	Thesis Submission
BBME 696	(3)	Thesis Research 3
BBME 697	(3)	Thesis Research 4

##### Required Courses (3 credits)

BBME 600D1	(1.5)	Seminars in Biological and Biomedical Engineering
BBME 600D2	(1.5)	Seminars in Biological and Biomedical Engineering

OR

BBME 600N1	(1.5)	Seminars in Biological and Biomedical Engineering
BBME 600N2	(1.5)	Seminars in Biological and Biomedical Engineering

##### Complementary Courses (12 credits)

3 credits from the following oB2

MDPH 607	(3)	Medical Imaging
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3 credits from the following:

BIEN 510	(3)	Engineered Nanomaterials for Biomedical Applications
BIEN 530	(3)	Imaging and Bioanalytical Instrumentation
BIEN 540	(3)	Information Storage and Processing in Biological Systems
BIEN 550	(3)	Biomolecular Devices
BIEN 560	(3)	Design of Biosensors
BIEN 570	(3)	Active Mechanics in Biology
BIEN 590	(3)	Cell Culture Engineering
BIEN 680	(4)	Bioprocessing of Vaccines
BMDE 501	(3)	Selected Topics in Biomedical Engineering
BMDE 502	(3)	BME Modelling and Identification
BMDE 503	(3)	Biomedical Instrumentation
BMDE 504	(3)	Biomaterials and Bioperformance
BMDE 505	(3)	Cell and Tissue Engineering
BMDE 508	(3)	Introduction to Micro and Nano-Bioengineering
BMDE 512	(3)	Finite-Element Modelling in Biomedical Engineering
BMDE 519	(3)	Biomedical Signals and Systems
BMDE 525D1	(3)	Design of Assistive Technologies: Principles and Praxis
BMDE 525D2	(3)	Design of Assistive Technologies: Principles and Praxis
BMDE 610	(3)	Functional Neuroimaging Fusion
BMDE 650	(3)	Advanced Medical Imaging
BMDE 654	(3)	Biomedical Regulatory Affairs - Medical Devices
BMDE 660	(3)	Advanced MR Imaging and Spectroscopy of the Brain
MDPH 607	(3)	Medical Imaging

6 credits at the 500-level or higher chosen from a list on the program web site <https://www.mcgill.ca/bbme/students/courses> or from other courses, at the 500 level or higher, at least 3 credits of which have both life sciences content and content from the physical sciences, engineering, or computer science, with the prior written approval of the Thesis Supervisor and the Graduate Program Director.

### 11.1.5 Master of Engineering (M.Eng.) Biological and Biomedical Engineering (Non-Thesis) (45 credits)

The M.Eng. in Biological and Biomedical Engineering; Non-Thesis program focuses on the life sciences, the physical sciences, and engineering, industrial practices and processes, and data science related to areas such as biological products, biomedical devices, and medical imaging. Hands-on experience through projects carried out during internships.

#### Internship Courses (18 credits)

BBME 681	(9)	Internship 1
BBME 682	(9)	Internship 2

#### Required Courses

BBME 600D1*	(1.5)	Seminars in Biological and Biomedical Engineering
BBME 600D2*	(1.5)	Seminars in Biological and Biomedical Engineering
BBME 600N1*	(1.5)	Seminars in Biological and Biomedical Engineering

BBME 600N2\*

(1.5)

Seminars in Biological and Biomedical Engineering

\* Students tak



**Required Courses (21 credits)**

BBME 600D1**	(1.5)	Seminars in Biological and Biomedical Engineering
BBME 600D2**	(1.5)	Seminars in Biological and Biomedical Engineering
BBME 600N1**	(1.5)	Seminars in Biological and Biomedical Engineering
BBME 600N2**	(1.5)	Seminars in Biological and Biomedical Engineering
BBME 681*	(9)	Internship 1
BBME 682*	(9)	Internship 2

\* must take place in the Biomanufacturing sector

\*\* Students take either BBME 600D1 and BBME 600D2 or BBME 600N1 and BBME 600N2.

**Complementary Courses (24 credits)**

Minimum of 18 credits from the following three lists of core courses. At least 12 credits must be chosen from biomanufacturing core courses. At least 12 credits must be chosen from BBME core courses, of which at least 6 credits must be chosen from quantitative courses.

**Biomanufacturing Core:**

BIEN 500	(3)	Special Topics in Bioengineering 1
BIEN 580	(3)	Synthetic Biology
BIEN 585	(3)	Metabolic Engineering
BIEN 590	(3)	Cell Culture Engineering
BIEN 670	(3)	Downstream Processing
BIEN 675	(3)	Process Analytical Technologies and Data Sciences
BIEN 680	(4)	Bioprocessing of Vaccines
BIEN 685	(3)	Gene and Cell Therapy Viral Vectors Biomanufacturing
BMDE 505	(3)	Cell and Tissue Engineering
CHEE 512	(3)	Stem Cell Bioprocess Engineering
CHEE 651	(4)	Advanced Biochemical Engineering

**BBME Courses (Quantitative):**

BIEN 510	(3)	Engineered Nanomaterials for Biomedical Applications
BIEN 530	(3)	Imaging and Bioanalytical Instrumentation
BIEN 550	(3)	Biomolecular Devices
BIEN 560	(3)	Design of Biosensors
BIEN 570	(3)	Active Mechanics in Biology
BIEN 590	(3)	Cell Culture Engineering
BMDE 502	(3)	BME Modelling and Identification
BMDE 503	(3)	Biomedical Instrumentation
BMDE 512	(3)	Finite-Element Modelling in Biomedical Engineering
BMDE 519	(3)	Biomedical Signals and Systems
BMDE 520	(3)	Machine Learning for Biomedical Data
BMDE 610	(3)	Functional Neuroimaging Fusion

**BBME Core (Non-Quantitative):**

BIEN 535	(3)	Electron Microscopy and 3D Imaging for Biological Materials
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BIEN 540	(3)	Information Storage and Processing in Biological Systems
BIEN 580	(3)	Synthetic Biology
BIEN 680	(4)	Bioprocessing of Vaccines
BMDE 501	(3)	Selected Topics in Biomedical Engineering
BMDE 504	(3)	Biomaterials and Bioperformance
BMDE 505	(3)	Cell and Tissue Engineering
BMDE 508	(3)	Introduction to Micro and Nano-Bioengineering Design of Assisti

Education Building, Room 614  
3700 McTavish Street  
Montreal, Quebec H3A 1Y2  
1110 Pine Avenue West  
Website: [mcgill.ca/edu-ecp/programs/prodev](http://mcgill.ca/edu-ecp/programs/prodev)

## 11.2.2 About the Graduate Certificate in Foundations of Health Science Education

As demand increases for experienced health care professionals with the skills to educate the next generation, the Institute of Health Sciences Education and the Department of Educational and Counselling Psychology are proud to offer a new Graduate Certificate in Foundations of Health Sciences Education.

In this interdisciplinary program, learners will gain knowledge of current education theories, as well as the expertise to apply this knowledge in health sciences curriculum design, instruction, assessment, and program evaluation. They will also be able to apply concepts of educational leadership and scholarship in their role as an educator in clinical and basic science settings. Expertise in this field can lead to leadership opportunities in clinical education, universities and education research.

The graduate certificate is offered in a blended format, combining in-person classes at McGill's Institute of Health Sciences Education with structured online learning, lectures and individual and group activities. Upon completion, learners will have the foundational knowledge and skills to pursue a Master's degree or PhD in health sciences education.

## 11.2.3 Graduate Certificate in Foundations of Health Sciences Education Admission Requirements

### 11.2.3.1 Admission Requirements

#### Background and CGPA

Applicants to the Graduate Certificate in Foundations of Health Sciences Education must:

- have, at minimum, an undergraduate degree in health sciences, health professions, or another related field;
- be a working health professional, a senior healthcare learner who is close to completing training to become a health professional, or a health science educator teaching in a health professions institution; and
- have a minimum CGPA of 3.0 out of 4.0. Please be aware that a CGPA of 3.0 is a minimum requirement only and does not guarantee acceptance.

**NOTE:** Applicants may be required to attend an interview during the admission process.

#### International Students

International Students

If you are an international applicant and wish to find out whether you qualify under McGill University's CGPA Guidelines for Graduate Admissions, visit Educational Credentials and Grade Equivalencies.

#### Proficiency in English

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 results of a *TOEFL* or *IELTS* exam with their application. Consult the [Institute for Health Sciences Education's website](#) for details.

### 11.2.3.2 Application Dates and Deadlines

EDPE 658	(3)	Introduction to HSE Curriculum and Program Development
EDPE 659	(3)	Introduction to Assessment and Evaluation in HSE
HSED 601	(3)	Introduction to Leadership in Health Sciences Education
HSED 602	(3)	Introduction to Scholarship in Health Sciences Education

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## **11.3 Neuroscience (Integrated Program)**

### **11.3.1 Location**

Irving Ludmer Pavillion, Room 302  
1033 Pine Ave. West  
Montreal QC H3A 1A2  
Website: [mcgill.ca/ipn](http://mcgill.ca/ipn)

**section 11.3.5: Doctor of Philosophy (Ph.D.) Neuroscience**

The IPN offers a highly competitive Ph.D. program that prepares students for successful scientific careers in the field of neuroscience. Over half of the students registered in the neuroscience graduate program at McGill University are in the doctoral stream.

**11.3.3 Neuroscience (Integrated Program) Admission Requirements and Application Procedures****11.3.3.1 Admission Requirements****General**

Applicants must hold a bachelor's degree, or its equivalent, from a recognized institution in a field related to the subject selected for graduate work, and must display an adequate background in basic sciences.

The applicant must present evidence of high academic achievement. A standing equivalent to a cumulative grade point average (CGPA) of 3.0 out of a possible 4.0 is required by Graduate and Postdoctoral Studies; however, the Integrated Program in Neuroscience (IPN) seeks applicants with a higher academic standing, and thus, requires a minimum CGPA of 3.3

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 results of a [TOEFL](#) or [IELTS](#) exam with their application. Consult the Integrated Program in Neuroscience's [website](#) for details.

**M.Sc. Degree**

Bachelor's degree with adequate background in basic sciences, or an M.D.

**Ph.D. Degree**

Applicants must hold a graduate-level degree in a field related to neuroscience or have an M.D. degree, preferably with postgraduate training. Applicants will also be considered for admission if enrolled in the Doctor of Medicine & Master of Surgery with Ph.D. (Joint M.D.,C.M. & Ph.D.) program through the Faculty of Medicine and Health Sciences at McGill University.

Students currently registered in the Master's in Neuroscience may be permitted to transfer to the Ph.D. program without submitting a master's thesis. Applicants are expected to have attained a high scholastic standing equal to, or greater than, the minimum cumulative grade point average of 3.5 out of 4.0 in all levels of study. In exceptional circumstances, a student **may** enter the Ph.D. program directly from their undergraduate degree if a CGPA of 3.7 is attained and if the student already presents extensive research experience.

To meet incoming students' diversity of individual interests and backgrounds, a graduate program is designed for each student at the time of entry. As part of the admission process, each applicant will identify, with the participation of the prospective thesis supervisor and the Graduate Studies Committee, a research thesis topic and the coursework required to complete the training deemed necessary for the degree. These decisions become an integral part of the graduation requirements for the student.

**11.3.3.2 Application Procedures**

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

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

**11.3.3.2.1 Additional Requirements**

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

- Curriculum Vitae
- Personal Statement
- Letters of Recommendation (2)

Consult the Integrated Program in Neuroscience's [website](#) for further details

**11.3.3.3 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 IPN 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](https://mcgill.ca/gps/contact/graduate-program).

Information on application deadlines is available at [mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines](https://mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines).

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

**11.3.4 Master of Science (M.Sc.) Neuroscience (Thesis) (45 credits)****Required Courses (36 credits)**

NEUR 696	(6)	Master's Thesis Research
NEUR 697	(9)	Master's Thesis Proposal
NEUR 698	(9)	Master's Seminar Presentation
NEUR 699	(12)	Master's Thesis Submission
NEUR 705	(0)	Responsible Research Conduct

**Complementary Courses (9 credits)**

3 credits from the following:

NEUR 630	(3)	Principles of Neuroscience 1
NEUR 631	(3)	Principles of Neuroscience 2

And 6 credits in other courses at the 500 level or higher that are relevant to the program.

Upon recommendation, depending upon their particular background and needs, students may be requested to take additional selected courses at the 500 level or higher.

Note: All M.Sc.-level students must register for a minimum of 12 credits per term during the first three terms of their master's program.

**11.3.5 Doctor of Philosophy (Ph.D.) Neuroscience**

Students with an M.Sc. degree continuing in this Department will receive credit exemptions for graduate coursework accomplished (including NEUR 630 or NEUR 631). It may be recommended that they take specialty courses related to their field of study in neuroscience. Students with an M.Sc. degree from another program will be required to take NEUR 630 and NEUR 631 and/or other courses listed under the M.Sc. degree depending upon their background and field of study.

Students with an M.D. degree proceeding directly into a Ph.D. program will be required to take NEUR 630 and NEUR 631. They will also be required to take 6 credits of graduate-level courses.

**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)**

NEUR 630	(3)	Principles of Neuroscience 1
NEUR 631	(3)	Principles of Neuroscience 2
NEUR 700	(0)	Doctoral Candidacy Examination
NEUR 705	(0)	Responsible Research Conduct

**Complementary Courses (6 credits)**

6 credits at the 500, 600, or 700 level, approved by the graduate program adviser.

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**11.4 Quantitative Life Sciences**

**11.4.1 Location**

Telephone: 514-398-4826  
 Email: [coordinator.qls@mcgill.ca](mailto:coordinator.qls@mcgill.ca)  
 Website: [mcgill.ca/qls](http://mcgill.ca/qls)

## 11.4.2 About Quantitative Life Sciences

Quantitative Life Sciences is the broad application of mathematical, computational, and other quantitative methods to study biological systems at all scales—from single molecules to the environment. It is part of a rapidly expanding field that includes such specializations as systems biology, bioinformatics, biophysics, medical informatics, computational biology, computational pharmacology, computational neuroscience, and mathematical biology.

Please refer to the [QLS website](#) for further details.

*section 11.4.4: Doctor of Philosophy (Ph.D.) Quantitative Life Sciences*

## 11.4.3 Quantitative Life Sciences Admission Requirements and Application Procedures

### 11.4.3.1 Admission Requirements

#### General

Applicants are expected to hold an undergraduate degree in one of the following areas (or equivalent): biology, chemistry, physiology, genetics, engineering, computer science, mathematics, statistics, physics, or chemistry.

Applicants must have a strong quantitative background. Such a background may be obtained by having at least the equivalent of a minor in computer science, mathematics, statistics, physics, chemistry, or engineering.

Applicants who do not have a formal education in life sciences must have a demonstrated interest in the field, for example, through an undergraduate research project or the completion of life-science courses.

Applicants are expected to have attained a high academic standing equal to, or greater than, the minimum Cumulative Grade Point Average of 3.3 (out of 4.0 at McGill University) in **all** levels of study.

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 results of the [T](#)

QLSC 601D2	(0)	Quantitative Life Sciences Seminars 1
QLSC 602D1	(0)	Quantitative Life Sciences Seminars 2
QLSC 602D2	(0)	Quantitative Life Sciences Seminars 2
QLSC 603D1	(0)	Quantitative Life Sciences Seminars 3
QLSC 603D2	(0)	Quantitative Life Sciences Seminars 3
QLSC 701	(0)	Ph.D. Comprehensive Exam

### Complementary Courses

9-11 credits

Students will be required to take one or two courses from each of the Quantitative and Life Science Blocks for a total of three, stream-specific courses.

### Biophysics Stream

Quantitative

BIEN 530	(3)	Imaging and Bioanalytical Instrumentation
BMDE 512	(3)	Finite-Element Modelling in Biomedical Engineering
BMDE 519	(3)	Biomedical Signals and Systems
CHEM 514	(3)	Biophysical Chemistry
CHEM 520	(3)	Methods in Chemical Biology
COMP 551	(4)	Applied Machine Learning
MATH 682	(4)	Statistical Inference
PHYS 519	(3)	Advanced Biophysics
PHYS 559	(3)	Advanced Statistical Mechanics
QLSC 611	(3)	Directed Readings

Life Sciences

BIOC 605	(3)	Protein Biology and Proteomics
BIOL 551	(3)	Principles of Cellular Control
PHGY 518	(3)	Artificial Cells
PHGY 520	(3)	Ion Channels
QLSC 611	(3)	Directed Readings

### Computational and Statistical Molecular Biology Stream

Quantitative

BIOS 601	(4)	Epidemiology: Introduction and Statistical Models
BMDE 502	(3)	BME Modelling and Identification
COMP 551	(4)	Applied Machine Learning
COMP 561	(4)	Computational Biology Methods and Research
COMP 598	(3)	Topics in Computer Science 1
HGEN 677	(3)	Statistical Concepts in Genetic and Genomic Analysis
MATH 523	(4)	Generalized Linear Models
MATH 533	(4)	Regression and Analysis of Variance



QLSC 611 (3) Directed Readings

Life Sciences

BIOC 603 (3) Genomics and Gene Expression  
BIOL 551 (3) Principles of Cellular Control  
EXMD 602 (3) Techniques in Molecular Genetics  
HGEN 661 (3) Population Genetics  
HGEN 692 (3) Human Genetics  
PHAR 503 (3) Drug Discovery and Development I  
PHAR 505 (3) Structural Pharmacology  
(3) Directed Readings

