

PhD in Biological Sciences

FACULTY OF ARTS AND SCIENCES | DEPARTMENT OF BIOLOGICAL SCIENCES

Overview and specifics

NUMBER	3-235-1-0
LEVEL	Graduate
TYPE	Philosophiae Doctor (Ph. D.)
CREDITS	90 credits
PROGRAM TYPE	Dissertation or thesis track

-  Admission in fall, winter and summer
 -  Submit a complete application as early as possible because, after September 1 (for the winter session) and February 1 (for the summer and fall sessions), applications will not be considered if all spaces are filled.
 -  Day course
 -  Offered at the Montréal
 -  Offered at the MIL
 -  Full-time
 -  Half-time
-  With international exchange option
 -  Guaranteed financial support of at least \$15,000 a year

Resource persons

PROGRAM INFORMATION

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Description



The Department of Biological Sciences will be moving to the new Science Complex in the fall of 2019. Discover your new surroundings in photos and video.

 MORE INFORMATION

Become an independent scientist by earning your **PhD in Biological Sciences**! Prove your ability to develop unique knowledge in a field of your choice.

At the doctoral level, you will prepare a thesis making a significant, original and high-quality scientific contribution. Your research should also lead to scientific publications in peer-reviewed journals.

You will develop and carry out your own original research projects! This is the perfect way to launch a career in advanced research in academia, government or industry.

Objectives

The main objective of the PhD is to train students to become independent scientists. Through a research project developed in collaboration with a research supervisor, the doctoral student-researchers will demonstrate their ability to develop original ideas in a field of knowledge and gradually master the scientific methodology to follow to achieve project objectives.

The purpose of the Museum Studies option is to train students to become independent scientists with a specialization in museology. Through a research project involving the use of museum databases or collections and developed in collaboration with a research supervisor, the doctoral student-researchers will demonstrate their ability to develop original ideas in a field of knowledge and gradually master the scientific methodology to follow to achieve project objectives.

The research should make a significant, original and high-quality scientific contribution and lead to scientific publications in peer-reviewed journals. Graduates should be able to develop and carry out their own original research projects. They should also be able to present and defend their ideas and pursue an advanced research career in academia, government or industry.

Strengths

- Laboratories equipped with the most sophisticated instruments.
- The Biodiversity Centre, housing the Ouellet-Robert Entomological Collection and the Marie-Victorin Herbarium, among other valuable collections.
- The Institut de recherche en biologie végétale (IRBV): an exceptional site for basic and applied research, located within the Montréal Botanical Garden, staffed by renowned professors and researchers.
- The Groupe de recherche interuniversitaire en limnologie et en environnement aquatique (GRIL): the only group studying eastern Canadian freshwater ecology.
- The Station de biologie des Laurentides: a true natural laboratory in a protected setting.
- The Symposium: an annual assembly focusing on the work of graduate student-researchers.
- Weekly seminars (in French) given by internationally reputed guest scientists.
- Guaranteed financial support of at least \$15,000 a year. Get informed!

Regulations

Students are advised to submit a complete application as early as possible as applications will not be considered if the program's capacity has been reached.

Studies in this program are governed by the educational regulations of the Faculty of Graduate and Postdoctoral Studies and the following provisions:

1. Admission requirements

To be admitted as a regular student to the PhD (Biological Sciences) program, candidates must:

- Meet the general admission requirements (section XX) of the "Règlement pédagogique de la Faculté des études supérieures et postdoctorales" (educational regulations of the Faculty of Graduate and Postdoctoral Studies).
- Have an MSc (Biological Sciences) or a master's degree in a relevant discipline or show proof of equivalent education.
- Have obtained a grade-point average at the graduate level of at least 3.3 out of 4.3 or the equivalent.
- Demonstrate good knowledge of French, English and any other language deemed necessary for their research.

1.1 Admission requirements - Direct entry to PhD in Biological Sciences

To be admitted as a regular student to the PhD (Biological Sciences) program, candidates must:

- Meet the general admission requirements (section XX) of the "Règlement pédagogique de la Faculté des études supérieures et postdoctorales" (educational regulations of the Faculty of Graduate and Postdoctoral Studies).
- Have a specialized BSc (Biological Sciences) or a bachelor's degree with a major or a minor in biology or an undergraduate degree that adequately prepares them for their chosen area of study or show proof of equivalent education.
- Have obtained a grade-point average of at least 3.6 out of 4.3 or the equivalent at the undergraduate level, unless (upon approval from the Dean) the student has sufficient experience or education further to the undergraduate level demonstrating the skills required for a PhD program.
- Demonstrate good knowledge of French and English.

1.2 Additional documents to submit with your application

- Letter of acceptance from a research supervisor
- Financial plan (fill out the Financial Resources form) (in French only)
- Curriculum vitae
- Three letters of recommendation – these letters are only required for candidates who have not completed their Master's in

Biological Sciences at Université de Montréal

- Outline of a research project (200 to 500 words)

2. Duration of program

The maximum length is 15 sessions (five years) for full-time students, excluding preparatory or “on leave” sessions. This deadline may be extended by one year with the permission of the department director.

3. Comprehensive exam

Students must take the written and oral components of the comprehensive exam by no later than the end of the sixth session of the program (seventh session for direct entry), and preparatory or “on leave” sessions are excluded in the calculation of this deadline. If the exam is deferred, the deadline will be extended by six months. The exam dates are set by the program director.

For the Museum Studies option, the comprehensive exam must be related to the field of museum studies.

Application deadlines

Before submitting an application, check the application periods for the chosen session.

Fall

- **Fall 2021:** From January 1st, 2020 to July 1st, 2021
- **Fall 2022:** From January 1st, 2021 to February 1st, 2022

Winter

- **Winter 2021:** From May 1st, 2019 to November 1st, 2020
- **Winter 2022:** From May 1st, 2020 to September 1st, 2021

Summer

- **Summer 2021:** From September 1st, 2019 to February 1st, 2021
- **Summer 2022:** From September 1st, 2020 to February 1st, 2022

Programs of origin

Several Université de Montréal students in this program came from the following programs:

PROGRAMS	TYPE	CREDITS	NUMBER	PERIOD	ENROLLMENT CAPACITY
Biology	Master's Degree	45 credits	2-235-1-0	Jour	

Program structure (3-235-1-0)

The doctorate program consists of 90 credits. There are two options:

- General Biology option (segment 70)
- Museum Studies option (segment 71)

Legend: CR: Credit, SC: Schedule, D: Day, E: Evening

SEGMENT 70 - GENERAL BIOLOGY OPTION

Number of credits: 84 mandatory credits for a thesis, 3 to 6 credits from optional courses chosen from the courses from blocks 70A, 70B, 70C and 70D and a maximum of 3 credits from blocks 70E and 70F.

The breakdown of credits depends on the student's previous education.

Block 70A Comprehensive coursework

Optional – maximum of 6 credits

COURSE	TITLE	CRSC	COURSE	TITLE	CRSC
BIO 6106	Advanced Cellular Biology	3 D	BIO 6790	Parasitism	3 D
BIO 6115	Advances in Phylogenetic Systematics	3 D	BIO 6803	Accountability and the Environment	1
BIO 6157	Plant Biochemistry and Molecular Biology	3	BIO 6820	Metal Biogeochemistry	2 D
BIO 6250	Molecular Evolution	3	BIO 6821	Metal Biogeochemistry Internship	1
BIO 6260	Microbial Genomics	3 D	BIO 6875	Principles of Biological Control	3 D
BIO 6441	Insect Systematics	3 D	BIO 6965	Biodiversity: Role, Threats, Solutions	3 D
BIO 6720	Landscape Ecology	3	BIO 6970	Wetland Ecology	3 D

Block 70B Thematic seminars

Optional – maximum of 6 credits

COURSE	TITLE	CRSC
BIO 6028	Plant Biology Seminars	3

Block 70C Methodology courses

Optional – maximum of 8 credits

COURSE	TITLE	CRSC	COURSE	TITLE	CRSC
BIO 6020	Microscopy	3	BIO 6077	Quantitative Data Analysis	4 D
BIO 6041	Introduction to R Programming	1	BIO 6245	Phylogenetic Analysis	4

Block 70D Specialized courses

Optional – maximum of 6 credits

COURSE	TITLE	CRSC
BIO 6008	Special Topics in Biology	3
BIO 6009	Directed Readings in Biology at the Master's Level	3
BIO 6011	Research Internship in Biology at the Master's Level	3

Block 70E Related courses

Optional – maximum of 3 credits

COURSE	TITLE	CRSC	COURSE	TITLE	CRSC
BIN 6002	Principles of Genomics Analysis	3 D	MSL 6515	Natural Science Collections	3 D
EDD 6050	Biodiversity Management	3 D	NSC 6060	Cellular Neurophysiology	3 D
ENV 6002	Environmental Impacts	3 E	NSC 6070	Functional Neurophysiology	3 D
GEO 6342	GIS: Theory	3 D	TXL 6014	Environmental Toxicology	3 E
GEO 6352	GIS: Practice	3 D			

Block 70F

Elective – maximum of 3 credits

Courses chosen with the program director's approval.

Block 70G Research and thesis

Mandatory – 84 credits

COURSE	TITLE	CRSC
BIO 7000	PhD Comprehensive Examination	0
BIO 7001	Thesis	84

SEGMENT 71 - MUSEUM STUDIES OPTION

Number of credits: 84 mandatory credits, of which 81 are for a thesis, 3 to 6 credits from optional courses and a maximum of 3 credits from elective courses.

The breakdown of credits depends on the student's previous education.

Block 71A Comprehensive coursework

Optional – maximum of 6 credits

Block 71B Thematic seminars

Optional – maximum of 6 credits

Block 71C Methodology courses

Optional – maximum of 8 credits

Block 71D Specialized courses

Optional – maximum of 6 credits

Block 71E Museum Studies

Mandatory – 3 credits

COURSE	TITLE	CRSC
PLU 7000	Integrative Seminar in Museum Studies	3

Block 71F

Elective – maximum of 3 credits

Courses chosen with the program director's approval.

Block 71G Research and thesis

Mandatory – 81 credits

COURSE	TITLE	CRSC
BIO 7003	Thesis	81

Programs to explore

Applicants interested in this program also applied to the following programs:

PROGRAMS	TYPE	CREDITS	NUMBER	PERIOD
Biology	Master's Degree	45 credits	2-235-1-0	Jour
Biomedical Engineering	Doctorate	90 credits	3-535-1-0	Jour
Biomedical Sciences	Doctorate	90 credits	3-484-1-0	Jour

Research expertise at a glance

- Discover our professors' different areas of research expertise : <http://en.bio.umontreal.ca/research/research-interests/>
- Consult our list of research centres, groups, chairs and laboratories : <http://en.bio.umontreal.ca/research/chairs-centres-and-research-groups/>

Find out more : <http://www.biochimie.umontreal.ca/research-activities/?lang=en>

Professors

Consult the list of the department's faculty members and their specializations : <http://en.bio.umontreal.ca/repertoire-departement/professeurs/>

Directory of theses and dissertations

Visit Papyrus, Université de Montréal's institutional repository, to search for research projects by our faculty and researchers as well as theses and dissertations by our students : <https://papyrus.bib.umontreal.ca/xmlui/?locale-attribute=en>

Research news

Read the latest research news from UdeM : <http://nouvelles.umontreal.ca/en/>