Interfaculty Graduate Program
Biological and Biomedical Engineering
Requirements for completing a Master's Degree with a Concentration in *Synthetic Biology*
For students starting in Fall 2026 or later

Requirements

A Master's Degree in Biological and Biomedical Engineering (BBME) with a concentration in '*Synthetic Biology*' requires the student to:

- Complete a minimum of 21 course credits
- Complete 24 Thesis credits
- Submit a thesis based on their research that is passed by an examiner.

Time Requirement

- The Master's Program at McGill University requires a minimum residence of three full-time terms.
- The Master's Program must be completed within 3 years of first registration.
- A student must register for at least 12 credits, and pay full fees, during each of the three residency terms.
- After the mandatory residency period, students register for additional sessions at reduced fees.
- Students are encouraged to complete their Master's degree as soon as possible. Most students in the BBME Master's Program complete their degree in less than 2½ years.

Course Requirements (Total credits: 21)

- All students are required to take the two-term course *Seminars in Biological & Biomedical Engineering* (BBME-600, 3 credits) in consecutive terms (D1 & D2 or N1 & N2), starting in their second term or later.
- All students are required to take course: *BIEN 580 Synthetic Biology* (3 credits).
- The remaining 15 credits complementary courses must be taken as follows:

  3 credits from the following quantitative core courses:
  BIEN 550 Biomolecular Devices (3 credits)
  BIEN 585 Metabolic Engineering (3 credits)
  BIEN 590 Cell Culture Engineering (3 credits)
  BIEN 595 Advanced Biomolecular Systems Modelling (3 credits)
  BMDE 521 Computational Methods Single-Cell Analytics (3 credits)

  3 credits from the following core courses:
  BIEN 540 Information Storage and Processing in Biological Systems (3 credits)
  BMDE 504 Biomaterials and Bioperformance (3 credits)
  BMDE 505 Cell and Tissue Engineering (3 credits)
  BMDE 507 Formulation and Delivery of Biotherapeutics (3 credits)
  BMDE 508 Introduction to Micro and Nano-Bioengineering (3 credits)

  3 credits from the following Synthetic Biology core courses: (course catalogue)
  BIEN 602 Biomanufacturing for RNA Biologics (3 credits)
  BINF 621 Bioinformatics: Molecular Biology (3 credits)
  CHEM 540 Advances in Industrial Biotechnology (3 credits)
  CHEM 542 Advanced Nucleic Acid Chemistry (3 credits)
  ECSE 556 Machine Learning in Network Biology (4 credits)
  HGEN 660 Genetics and Bioethics (3 credits)

HGEN 676 Lab Course in Genomics (3 credits)
PLNT 662 Advances in Plant Biotechnology (3 credits)

6 credits from the following Synthetic Biology courses: (course catalogue)
BIEN 685 Gene and Cell Therapy Viral Vectors Biomanufacturing (3 credits)
BINF 511 Bioinformatics for Genomics (3 credits)
BTEC 535 Functional Genomics in Model Organisms (3 credits)
CHEE 651 Advanced Biochemical Engineering (4 credits)
COMP 561 Computational Biology Methods and Research (4 credits)
COMP 565 Machine Learning in Genomics and Healthcare (4 credits)
HGEN 670 Advances in Human Genetics 1 (3 credits)
HGEN 675 Stem Cell Biology (3 credits)
HGEN 677 Statistical Concepts in Genetic and Genomic Analysis (3 credits)
PHAR 503 Drug Discovery and Development 1 (3 credits)
PHAR 508 Drug Discovery and Development 3 (3 credits)
PHGY 518 Artificial Cells (3 credits)

Thesis Requirements (Total credits: 24)

- Thesis credits are obtained by registering for the following courses, over the three residency terms as indicated below:

Term/Semester	Course No.	Course Name	No. of Credits
First	BBME-693	Thesis Research	6
Second	BBME-694	Thesis Research	6
Third	BBME-695	Thesis Submission	12

All three thesis courses must appear on your transcript. **NOTE: Do not register for any of these courses more than once.**

The Master's thesis must be prepared and submitted following the guidelines outlined on the Graduate and Postdoctoral Studies Web site http://www.mcgill.ca/gps/students/thesis.

Thesis committee

A thesis committee will be formed within 3 months of the start of the program. The thesis committee consists of (1) the thesis supervisor(s), (2) one internal member who is a faculty member in the BBME program. The Internal member also acts as the GPD representative (GPD representative cannot be the co-supervisor), (3) optionally, one additional member who is a faculty member of any department at McGill University.

Progress Tracking

Progress for the Master's Program is tracked with the schedule of meetings shown at the end of the document.

Student Advising Meeting

- Must take place within ten (10) days of the student starting the Program.
- The meeting is between the student and the BBME Student Affairs Officer (SAO).
- In this meeting the SAO will discuss course selection including Program entry requirements (i.e. pre-requisites)
- The outcome of this meeting is always "Satisfactory".

Initial Thesis Meeting

- Must take place, and the form must be completed and signed, within five (5) months of the student starting the Program.
- An “Unsatisfactory” initial meeting must be repeated within six (6) weeks.
- A student will be asked to withdraw from the Program following two consecutive Initial Thesis Meetings where progress is deemed to be Unsatisfactory.

Thesis Progress Meetings

- Must take place, and the form must be completed and signed, within one (1 year) of the Initial Thesis Meeting and yearly thereafter in the case of satisfactory progress.
- Following a meeting where progress was deemed to be Unsatisfactory, a supplementary progress tracking meeting must be held within three (3) months.
- A student will be asked to withdraw from the Program following two consecutive Progress Meetings where progress is deemed to be Unsatisfactory.

Notes:

- With the exception of the Student Advising Meeting, the student, their supervisor(s), and one internal BBME member must be present at all meetings. The internal member also acts as the Chair representative (Chair representative cannot be the co-supervisor). There is also the option of one additional member (any faculty member at McGill) who can serve on the committee.
- Forms and policy statements are available on the BBME Web site.
- The Graduate Program Coordinator (GPC) will notify the student that the meeting is due and attempt to schedule it. It is the student’s responsibility to ensure that this occurs in a timely manner, assist with scheduling the meeting if necessary, and supply the necessary documentation. Failure to hold a meeting in a timely manner will result in an “Unsatisfactory” rating for the meeting.
- Students are required to prepare and circulate a report prior to each scheduled meeting. A student's submission for a meeting (initial report, progress report, etc.) will be due on a date fixed by the GPC and will be communicated to the student well in advance of the meeting. The report must be submitted no later than that date, even if the date falls on a weekend or holiday, and regardless of when the meeting takes place. Submission dates will be tracked by the GPC. A report submitted late will result in the student receiving a warning that will be included in the student's record. A second report submitted late will be treated as equivalent to an 'Unsuccessful' meeting for the purposes of determining the student's status in the program.
- Any change of membership for student advisory committees should be sent to the GPC at info.bbme@mcgill.ca. The GPC will forward these requests to the GPD for approval. The GPC needs to check and update the student’s dossier, and we need to make sure that the committee membership rules are adhered to.
- Any student-related forms that needs a GPD or departmental signature should be sent to the GPC at info.bbme@mcgill.ca. The GPC will then forward it to the GPD or the department chair for signature as needed. This will facilitate proper tracking of student forms.

Pre-Submission Seminar

- The final oral seminar must be scheduled prior to the initial thesis submission. The supervisor(s) and the Chair representative must attend the seminar.
- Open to McGill community, advertised by BBME program.

Extraordinary Meeting

This is used for addressing issues outside the normal meeting schedule and can occur at any time during the student's program. See the policy document for Extraordinary meetings for details.

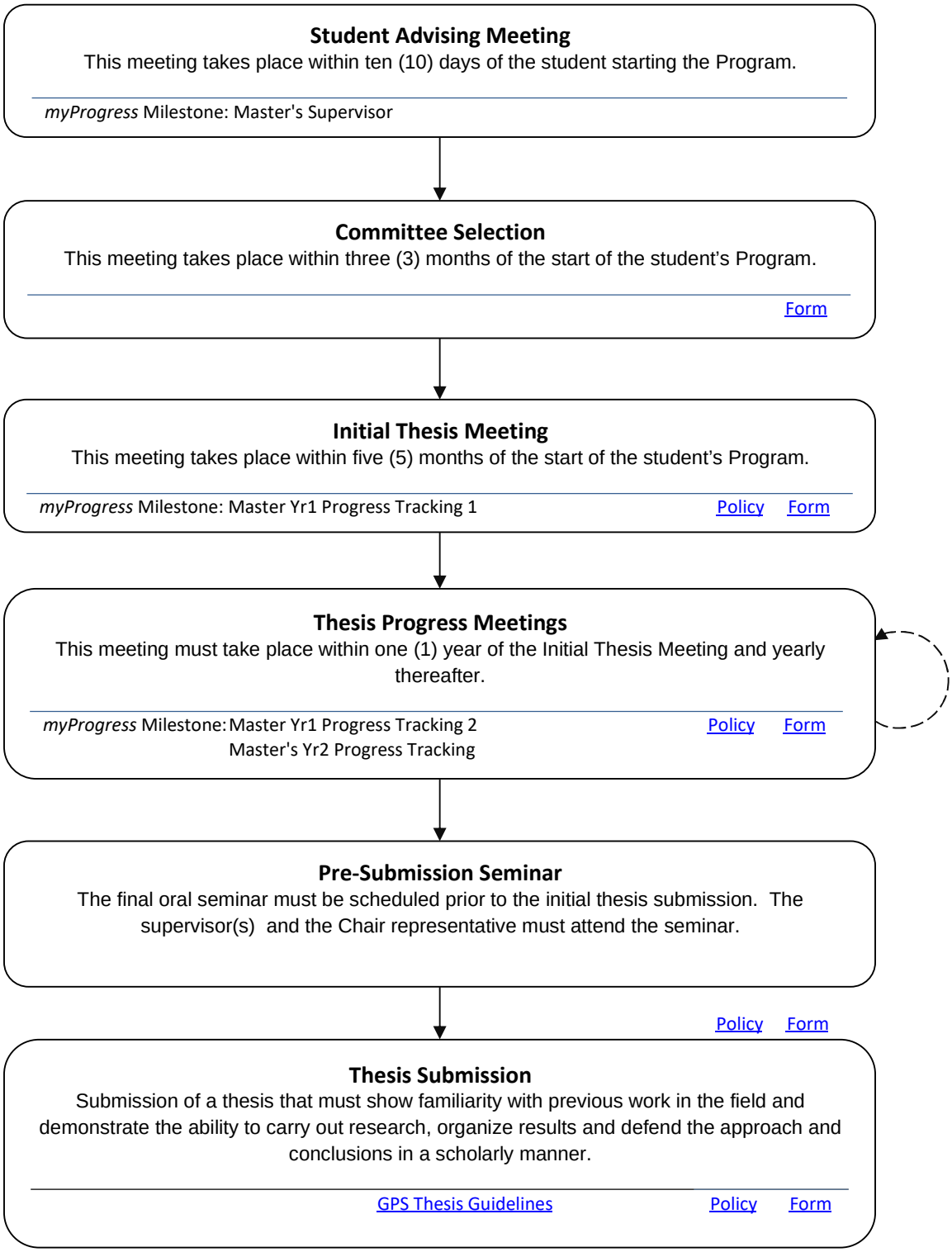
Fast-Track Transfer to the Ph.D. Program

There is a possibility of proceeding directly to the Ph.D. Program after completion of Master's course work without having to complete a thesis. This arrangement is called Fast-Tracking and is used only in special circumstances where the student has performed very well in assigned courses and demonstrated exceptional research/creative potential, and where their Master's research has given rise to a project that can be extended to a Ph.D.-level project. The policy and procedures for Fast-Track Transfer to the Ph.D. Program can be found on the BBME Web site. Policy Forms

Stages Outside the University

Deadlines for student meetings may be extended for students participating in *Stages* outside the university. The following departmental policy will apply:

- The *stage* must be approved by the student's supervisor and the GPD.
- The date, duration and location of the *stage* must be noted on the tracking forms.
- Extensions to meeting dates will be determined by the committee in advance and approved by the GPD.
- Irrespective of any extension of meeting deadline, the degree must be completed within the university's time limitation policy.


Student Advising Meeting
This meeting takes place within ten (10) days of the student starting the Program.
myProgress Milestone: Master's Supervisor
Committee Selection
This meeting takes place within three (3) months of the start of the student's Program.
Form
Initial Thesis Meeting
This meeting takes place within five (5) months of the start of the student's Program.
myProgress Milestone: Master Yr1 Progress Tracking 1
Policy
Form
Thesis Progress Meetings
This meeting must take place within one (1) year of the Initial Thesis Meeting and yearly thereafter.
myProgress Milestone: Master Yr1 Progress Tracking 2
Master's Yr2 Progress Tracking
Policy
Form
Pre-Submission Seminar
The final oral seminar must be scheduled prior to the initial thesis submission. The supervisor(s) and the Chair representative must attend the seminar.
Policy
Form
Thesis Submission
Submission of a thesis that must show familiarity with previous work in the field and demonstrate the ability to carry out research, organize results and defend the approach and conclusions in a scholarly manner.
GPS Thesis Guidelines
Policy
Form