

WELCOME

On behalf of the faculty and staff of the Institute of Biomedical Engineering, we would like to extend a warm welcome to you. Whether you are new to the Institute or continuing in your graduate studies here at the University of Toronto, we hope that this handbook will be of assistance to you. We always welcome your comments and suggestions and look forward to assisting you throughout your graduate experience.

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Contents

1.0	REGISTRATION POLICIES AND PROCEDURES	5
1.1	Registering in your Program	5
	Students must register annually, in September, for each year of the program. The first step to registration is payment of fees or other fees arrangement that have been made. A student is considered to be registered once admission conditions are cleared; to clear all conditional offers of admission, new students must submit a final official transcript reflecting final grades and evidence of degree conferral to the Institute.	5
	Please see section 6.0 Registration and Enrolment in the SGS Calendar for more information:	5
1.2	Late Registration.....	6
1.3	Dual Registration For One Session.....	6
1.4	Deferred Payment of Fees	6
2.0	TUITION AND FUNDING	7
3.0	GRADUATE PROGRAMS: REQUIREMENTS	10
3.1	The Biomedical Engineering Program – MASc	10
3.1.1	Required Courses	10
3.1.2	Requirements Related to the Research Thesis	11
3.1.3	Academic Standing and Satisfactory Progress.....	11
3.2	Direct Transfer (Bypass) from MASc to a PhD	11
3.3.1	Course Requirements for the PhD Program	12
3.3.2	Requirements Related to the PhD Research Thesis.....	12
3.3.3	Academic Standing and Satisfactory Progress.....	12
3.3.4	Timeline for Completing Degree Requirements.....	12
3.4	Direct Entry and By-pass PhD Program Requirements	13
3.4.1	Course Requirements for the PhD Program	13
3.4.2	Requirements Related to the PhD Research Thesis.....	13
3.4.3	Academic Standing and Satisfactory Progress.....	14
3.4.4	Timeline for Completing Degree Requirements.....	14
3.5	Collaborative Program in Biomedical Engineering – MASc	14
3.6	Collaborative Program in Biomedical Engineering – PhD	15
3.7	Course Requirement Breakdown	15
3.8	Specialty Topics & Courses.....	16

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

4.0 SEMINAR REQUIREMENTS	19
5.0 COMMITTEE MEETINGS	20
5.2 Committee Meeting Preparation, Presentation, Progress Report	22
5.2 Bypass examination	24
5.3 PhD Qualifying Examination	25
5.4 Collaborative Program Committee Meeting Requirements	27
6.0 ENROLMENT AND COURSE WORK	27
6.1 Adding and Dropping Courses	27
6.2 Grading and Evaluation	28
6.3 Extra Courses Not Required for the Degree	28
6.4 Academic Standing and Satisfactory Progress	28
7.1 Biomedical Engineering Program: MASc	30
7.2 Biomedical Engineering Program – PhD	32
8.1 Supervision: What you should expect	35
8.2 Safety	35
8.3 Ethics	35
8.4 Intellectual Property and the Graduate Student	35
8.5 Plagiarism and other Cases of Academic Misconduct	35
8.7 Change of Primary supervisor	37
8.8. Program Withdrawal and Termination of Registration	38
8.9 Change of Address	38
8.10 Office Space and Keys	38
8.11 Mailboxes	38
8.12 Student Cards and E-mail Address	38
8.13 Purchases	39
8.14 Fax and Photocopy	39
8.15 Payroll	39
8.16 Leaves of Absence and Student Personal Time Off	39
8.17 Graduate Course Grade Scales	41
8.18 Policy on Extension and Late Withdrawal Requests for Graduate Courses	42
8.19 Academic Appeals (for a course mark, course failure or other academic decisions)	42

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

8.20 BESA (BioEngineering Student Association)	43
APPENDIX A -	44
Degree Milestones Summary.....	44
APPENDIX B –	45
Proposal Components	45
APPENDIX C -	46
Recommended Agendas.....	46
APPENDIX D - THESIS STRUCTURE.....	50
APPENDIX E -	52
UNIVERSITY OF TORONTO FULLY AFFILIATED TEACHING HOSPITALS	52

1.0 REGISTRATION POLICIES AND PROCEDURES

Students registered as full-time students in the School of Graduate Studies must be engaged in their studies on a full-time basis, as required by government regulations for full-time graduate studies.

Full-time graduate students are defined according to government regulations as follows:

1. They must be pursuing their studies as a full-time occupation and identify themselves as full-time graduate students.
2. They must be designated by the University as full-time students.
3. They must be geographically available and visit the campus regularly.
4. They must be considered to be full-time students by their supervisors.
5. If an academic program requires an absence from the University, students must apply through their graduate unit for permission to be off campus

A full-time student may be absent from the University for an extended period or may participate in a program offered by another university if, and only if, the student has received written permission from the graduate unit in which he or she is registered. A graduate student who, in a given session, is absent from the University without receiving prior approval may lose good academic standing. In exceptional cases, a graduate unit may recommend to the School of Graduate Studies the termination of the student's registration and eligibility.

<https://www.sgs.utoronto.ca/academic-progress/registration-enrolment/>

1.1 Registering in your Program

Students must register annually, in September, for each year of the program. The first step to registration is payment of fees or other fees arrangement that have been made. A student is considered to be registered once admission conditions are cleared; to clear all conditional offers of admission, new students must submit a final official transcript reflecting final grades and evidence of degree conferral to the Institute.

Please see section 6.0 Registration and Enrolment in the SGS Calendar for more information:

<https://sgs.calendar.utoronto.ca/sites/public/sgs/files/2020-21-SGS-Calendar.pdf>

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

New graduate students will receive registration instructions prior to the registration dates listed in the 2020-21 Sessional Dates. Students may access registration instructions from the SGS website:

<https://www.sgs.utoronto.ca/academic-progress/registration-enrolment/>

The initial payment of academic and incidental fees will ensure the student is registered in the program. Payment of fees must be made through a Canadian bank, payable to the University of Toronto in Canadian funds. Failure to register as required will cause the student's candidacy status to lapse.

The SGS website is the most up-to-date place to find information on registration, fees, and University of Toronto policy. Please see the following website for greater details:

<https://www.sgs.utoronto.ca/admissions/graduate-fees/>
<https://studentaccount.utoronto.ca/>

1.2 Late Registration

Students are responsible for ensuring proper registration by the appropriate deadlines. Late registration will be subject to an additional fee as outlined by the School of Graduate Studies.

1.3 Dual Registration For One Session

Dual registration in two different programs is not permitted without approval of the Institute. These programs are available for MASc students and PhD students. . PhD students can be considered for registration in more than one graduate program provided:

- 1) The second degree is conducted part-time;
- 2) The student completed their Qualifying Exam or By-pass into the PhD program;
- 3) The student has obtained written approval from their supervisor.

A dual registrant will be engaged in full-time doctoral studies. He/she will be registered full-time in the doctoral program and part-time in the master's. Only fees for the doctoral program will be charged.

1.4 Deferred Payment of Fees

Fee deferrals allow students to register for the academic year without having to make a payment toward their academic fees. This can be done through ACORN (<https://www.acorn.utoronto.ca/>). Once approved, your fees are deferred until April 30th of the current academic year. Students are still eligible to make payments toward fees during the deferral period, though they are not required. Interest is charged on any outstanding balance as of May 17th and the full balance must be paid by August in order for registration to be approved for the next academic year. Students with an outstanding balance will not be permitted to register for the upcoming year if there is an outstanding balance.

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

Students may defer tuition fees directly on ROSI or by contacting the Program Office of the Institute or the collaborating departments if you are in the Collaborative Program

You may temporarily defer payment of fees if you receive one of the following:

- OSAP – fees can be deferred at SGS (with the exception of Management, OISE/UT, Social Work, and Information Studies who defer fees at their own department) when you present a Notice of Assessment covering at least the minimum first payment.
- University of Toronto Fellowships, OGS, OGSST, NSERC, SSHRC, CIHR, Connaught, Mary Beatty, TAS or RAS with full funding package – fees can be deferred at departments.
- University funding package (major award, research stipend, teaching stipend)
- U.S. Loans – fees can be deferred at Admissions and Awards.
- All other loans and awards – fees can be deferred at SGS.

Students who are not receiving loans or a university funding package, but have proof of university funding (TA, RA, major award, etc.) which exceeds the Minimum Payment to Register may request a fee deferral by submitting the Register Without Payment (Fee Deferral) form to their graduate unit. Visit the student forms and letter requests page to access the form for your session.

If you are registering late, you must come to the SGS Student Academic Services office in person and request to register without payment (i.e., make a fee deferral). Late registration fees will be assessed.

Please see the link below for more information on fee deferrals:

https://www.sgs.utoronto.ca/admissions/graduate-fees/#section_14

2.0 TUITION AND FUNDING

The Institute's annual stipend is based on a student's year of study, their legal status, and whether they will receive a major annual award ($\geq \$10,000$) or not.

2.1 Cost and Income: Guaranteed minimum funding

Tuition and Stipend	MASc		PhD	
	Domestic	International	Domestic	International
Tuition and Fees	\$7,859	\$27,329	\$7,859	\$8,579
Basic Funding (1)	\$25,000	\$43,000	\$26,500	\$27,000
Award Funding (2)	\$27,000	\$45,000	\$28,500	\$29,000

Students are guaranteed funding for the expected completion time of their program; MASc students are guaranteed to be funded by their supervisor for 2 years and PhD students are guaranteed to be funded by their supervisor for 5 years. The departmentally funded portion of the stipend (also known as the "U of T Fellowship – BME") is guaranteed for up to one year for

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

domestic MASc students and up to 4 years for domestic PhD students. After this eligibility period passes, supervisors are expected to top up their award to meet the minimum stipend requirement.

International students who obtain Permanent Resident status during their term as a full-time graduate student will only pay domestic student tuition and fees and may receive the BME fellowship support only if they fall within the eligibility years (i.e. the student is in year three or less of their PhD program).

Departmental contribution to basic funding is provided only to students without any major award(s). Major award holders will have the departmental contribution replaced by award funds. Financial support beyond your first year will be contingent upon your satisfactory performance.

Basic Funding: Students without major awards (< \$10,000)

Financial Support		MASc		PhD	
Program Year	Fund Source	Domestic	International	Domestic	International
1	Department	\$8,000	\$0	\$10,000	\$0
	Supervisor	<u>\$17,000</u>	<u>\$43,000</u>	<u>\$16,500</u>	<u>\$27,000</u>
	Total	\$25,000	\$43,000	\$26,500	\$27,000
2	Department	\$0	\$0	\$10,000	\$0
	Supervisor	<u>\$25,000</u>	<u>\$43,000</u>	<u>\$16,500</u>	<u>\$27,000</u>
	Total	\$25,000	\$43,000	\$26,500	\$27,000
3	Department			\$10,000	\$0
	Supervisor			<u>\$16,500</u>	<u>\$27,000</u>
	Total			\$26,500	\$27,000
4	Department			\$10,000	\$0
	Supervisor			<u>\$16,500</u>	<u>\$27,000</u>
	Total			\$26,500	\$27,000
5*	Department			\$0*	\$0
	Supervisor			<u>\$26,500</u>	<u>\$27,000</u>
	Total			\$26,500	\$27,000

Award Funding: Students holding major awards (≥ \$10,000)

Financial Support		MASc		PhD	
Program Year	Fund Source	Domestic	International	Domestic	International
Any	Department	\$0	\$0	\$0	\$0
	Supervisor (plus award)	<u>\$27,000</u>	<u>\$45,000</u>	<u>\$28,500</u>	<u>\$29,000</u>
	Total	\$27,000	\$45,000	\$28,500	\$29,000

For the Funding Policy please see: <https://bme.utoronto.ca/current-students/tuition-and-funding/>

2.2 Fellowships and Awards

Students are strongly encouraged to apply for external scholarships. Canadian citizens and permanent residents may apply for federal scholarships from granting agencies such as the Natural Sciences and Engineering Research Council of Canada (NSERC), or the Canadian Institutes of Health Research (CIHR), or provincial programs such as the Ontario Graduate Scholarship Program (OGS). Students may also apply for the Queen Elizabeth II - Graduate Scholarship in Science and Technology (QEII-GSST). Although NSERC and CIHR scholarships are strictly reserved for Canadian citizens and permanent residents, OGS and QEII-GSST awards are available to international students with outstanding academic records. Some scholarships may be multi-year awards, in which case, it is the student's responsibility to complete all necessary paperwork to allow continuation of his/her award.

For the award schedule, please visit: <https://bme.utoronto.ca/current-students/awards-schedule/>

For the internal award application, please visit: <https://bme.utoronto.ca/current-students/apply-to-internal-scholarships/>

For students registered in the Biomedical Engineering or the Clinical Engineering Programs, applications should be submitted to the BME Program Office.

Information on other external scholarships can be found through the School of Graduate Studies (<http://www.sgs.utoronto.ca>). Scholarship and fellowship opportunities are regularly announced by the Graduate Studies offices of both the Faculties of Engineering and Medicine. Students are strongly encouraged to consider these competitions.

A limited number of Teaching Assistantship positions are also available to students who are officially registered in a degree program at the University. Information about the available positions is usually posted approximately one to two months prior to the beginning of each term on the BME website. All terms and conditions of employment are set out in the Collective Agreement between the Canadian Union Public Employees (CUPE Local 3902) and the Governing Council of the University of Toronto.

2.3 Doctoral Completion Award

The aim of the Doctoral Completion Award (DCA) is to provide support to full-time PhD students after their guaranteed basic graduate funding ends.

The value of the DCA award varies year to year.

To hold a DCA, a student must be in good standing and no longer be eligible for guaranteed graduate funding. In addition, they must pass their Departmental Doctoral Defense or Senate Final Oral Exam during DCA award term. A student can hold the DCA during a maximum of two consecutive terms and a student is no longer eligible to hold a DCA after all their PhD requirements have been met.

All PhD students are automatically considered for this award. The DCA award will be provided to students before the start of the semester as part of the funding package.

2.4 Payment

Setup Direct Deposit

Students are strongly encouraged to setup direct deposit to receive both departmental and supervisor funds. Ensure that direct deposit is fully activated on your account by following **both** instructions below.

To receive departmental funds

Set up direct deposit on ACORN by following instructions on <https://help.acorn.utoronto.ca/how-to/> under the “Finances” section.

To receive supervisor funds

Some investigator accounts are established through our affiliate hospitals and not directly managed by university payment systems. Thus, to setup direct deposit on HRIS (for supervisor contribution), return the U of T Payroll Bank Authorization Form (<https://bme.utoronto.ca/services/forms-and-resources/>) for Direct Deposit to our HR Office in RS407 (or email the completed form to hr.ibbme@utoronto.ca).

Activate Payment

At the beginning of every academic year (normally around late July/early August), students must complete and return a BME Supervisor–Student Agreement Form to the Graduate Office to activate pay instalments. Email the completed form to grad.ibbme@utoronto.ca.

3.0 GRADUATE PROGRAMS: REQUIREMENTS

3.1 The Biomedical Engineering Program – MASc

The Biomedical Engineering Program (BME) leading to the Master of Applied Science (MASc) degree provides an opportunity for students to pursue advanced research studies within the field of Biomedical Engineering.

The program requires full-time study, with students committed to completing the degree requirements within 18-24 months of registration. The program of study normally consists of four-half credit courses (2.0 Full course equivalents or FCEs) relevant to the thesis research and a research thesis completed under the guidance of a supervisor. A half- credit course is defined as one semester long (approximately thirteen weeks). Courses should be chosen in consultation with the thesis supervisor.

3.1.1 Required Courses

Graduate courses and seminars for the master's degree program are:

- Two of the following (1.0 FCE):
 - BME 1477H *Biomedical Engineering Project Design and Execution* (0.5 FCE)
 - BME 1478H *Coding for Biomedical Engineers* (0.5 FCE)
 - BME 1479H *Statistical Discovery Techniques for Biomedical Researchers* (0.5 FCE)
- Two half-course electives relevant to the student's area of research (1.0 FCE).
- BME 1010Y Graduate Student Seminar each year registered in the program.
- BME Health & Safety Training Workshop, WHMIS, and Biohazard and Safety.
- Faculty of Engineering 'Ethics in Research' Seminar (JDE1000)

Other students, professors, your supervisor and the graduate coordinator can provide advice on course selection. It is recommended that MASc students complete their course requirements within the first year of registration.

3.1.2 Requirements Related to the Research Thesis

- Supervisory committee meetings, yearly or more frequently (see section 5.0)
- Completion of a research thesis (see Section 7.0)
- Departmental Thesis Defense (see Section 7.0)

3.1.3 Academic Standing and Satisfactory Progress

Students are expected to remain in good standing and show satisfactory progress in their research and in their coursework during their program. Students who fail to remain in good standing and show satisfactory progress may face termination of their registration in the program (see section 6.4).

3.2 Direct Transfer (Bypass) from MASc to a PhD

MASc students with excellent performance may be permitted to transfer (bypass) into the PhD program, under the same supervisor, after completing not more than fourteen months of their master's degree program. Approval of transfer will be evaluated on the basis of the student's advanced research capabilities, as well as academic standing. MASc students in the Biomedical Engineering Program who wish to transfer directly into the PhD program, and bypass the master's thesis examination, are required to take a bypass examination (i.e. a PhD qualifying exam, see Section 5.3). If the candidate has spent more than fourteen months in an MASc program, they will be expected to complete their thesis at the master's level and reapply to the PhD program. Students will be considered for bypass if they have a recommendation from their Master's Committee and/or their supervisor and have maintained an A- average at the master's level.

Student who successfully bypass in the PhD program will be subject to the degree requirements and timeline of Direct-Entry PhD students as outlined in Section 3.4. Students will be required to complete the coursework for both the MASc and PhD programs, a total of six courses. Upon

transfer into the PhD program, students will be considered registered in year two of their PhD program.

3.3 The Biomedical Engineering Program – PhD

The Biomedical Engineering Program leading to the Doctor of Philosophy (PhD) degree is intended for students performing research at the most advanced level. Candidates for this degree program usually hold a master's degree.

A program of study for students admitted into the PhD program (with a thesis-based Master's degree in biomedical engineering) normally consists of two half-credit courses, a PhD Qualifying examination and the successful completion and defense of an extensive research thesis. All required courses should be completed within the first two years, and no more than four years should be needed to complete all degree requirements.

3.3.1 Course Requirements for the PhD Program

Students who hold a master's degree in Biomedical Engineering are required to take two of the following (1.0 full course equivalent or FCE):

- BME 1477H *Biomedical Engineering Project Design and Execution* (0.5 FCE);
 - BME 1478H *Coding for Biomedical Engineers* (0.5 FCE);
 - BME 1479H *Statistical Discovery Techniques for Biomedical Researchers* (0.5 FCE).
-
- BME 1011Y Graduate Student Seminar Series each year registered in the program
 - BME Health & Safety Training Workshop, WHMIS, and Biohazard and Safety.
 - Faculty of Engineering 'Ethics in Research' Seminar (JDE1000)

****Students are limited to one, 500 level course in fulfillment of degree requirements.**

3.3.2 Requirements Related to the PhD Research Thesis

- Supervisory committee meetings, yearly or more frequently (see Section 5.0)
- Pass a PhD Qualifying Exam (see Section 5.3)
- Completion of a PhD research thesis (see Section 7.0)
- Departmental PhD Oral Examination (see Section 7.0)
- Final PhD Oral Examination (see Section 7.0)

3.3.3 Academic Standing and Satisfactory Progress

Students are expected to remain in good standing and show satisfactory progress in their research and in their coursework during their program. Students who fail to remain in good standing and show satisfactory progress may face termination of their registration in the program (see section 6.4).

3.3.4 Timeline for Completing Degree Requirements

Doctoral students must complete all required course work within the first 3 years of their program in order to remain in good academic standing.

A doctoral student will be denied further registration in their program and will have their registration eligibility terminated at the end of the third year of registration if, by that time:

- The student has not completed all requirements for the degree exclusive of thesis (including course requirements, language requirements, PhD qualifying examinations); or
- The student does not have an approved thesis topic, supervisor, or supervisory committee.

Students must maintain satisfactory progress in their program and remain in good academic standing. Please see section 6.4 of the handbook for more information.

The notation, *Candidacy Achieved*, will appear on the transcript of the student who has completed all requirements for the degree exclusive of thesis. A student who has failed to achieve candidacy may be permitted to register in the program for up to 12 months, subject to approval by BME. To apply for an extension, the student must complete the *Extension to Achieve Candidacy* form and present to the graduate unit concerned the causes for the delay and evidence that the remaining candidacy requirements will be completed within the period of the extension requested. The completed Extension to Achieve Candidacy form and all supporting documents for the extension must be filed at the graduate unit. A copy of the completed Extension to Achieve Candidacy form must be submitted to SGS for processing before the deadline to achieve candidacy.

Please see *Appendix F* for course details.

3.4 Direct Entry and By-pass PhD Program Requirements

The Direct-entry Doctor of Philosophy (PhD) degree is intended for students who are able to perform research at the Doctoral level directly from their Undergraduate degree. (see section 3.2)

3.4.1 Course Requirements for the PhD Program

- Six half courses, or three full-course equivalents (FCE), relevant to the thesis research, chosen in consultation with their supervisor. These include the four half courses that would have been completed at the Master's level, or six half courses required for the MHSc, as well as the two half course required for PhD.
- BME 1011Y Graduate Student Seminar Series each year registered in the program.
- BME Health & Safety Training Workshop, WHMIS, and Biohazard and Safety.
- Faculty of Engineering 'Ethics in Research' Seminar (JDE1000)

****Students are limited to one, 500 level course in fulfillment of degree requirements.**

3.4.2 Requirements Related to the PhD Research Thesis

See section 3.3.2

3.4.3 Academic Standing and Satisfactory Progress

See section 3.3.3

3.4.4 Timeline for Completing Degree Requirements

Direct entry and By-pass Doctoral students must complete all required course work within the first 4 years of their program in order to remain in good academic standing.

A direct-entry doctoral student will be denied further registration in their program and will have their registration eligibility terminated at the end of the fourth year of registration if, by that time:

- The student has not completed all requirements for the degree exclusive of thesis (including course requirements, language requirements, PhD qualifying examinations); or
- The student does not have an approved thesis topic, supervisor, or supervisory committee.

Students must maintain satisfactory progress in their program and remain in good academic standing. Please see section 6.4 of the handbook for more information.

The notation, *Candidacy Achieved*, will appear on the transcript of the student who has completed all requirements for the degree, exclusive of thesis. A student who has failed to achieve candidacy may be permitted to register in the program for up to 12 months provided that the graduate unit concerned approves. To apply for an extension, the student must complete the *Extension to Achieve Candidacy* form and present it to the BME Program Office with the causes for the delay and evidence that the remaining candidacy requirements will be completed within the period of the extension requested. The completed Extension to Achieve Candidacy form and all supporting documents for the extension must be filed at the graduate unit. A copy of the completed Extension to Achieve Candidacy form must be submitted to SGS for processing before the deadline to achieve candidacy.

3.5 Collaborative Program in Biomedical Engineering – MASc

The Collaborative Program involves close collaboration with many other departments within the University. Students in the Collaborative Program leading to a Master of Applied Science (MASc)/Master of Science (M.Sc.) are required to register in the School of Graduate Studies through a collaborating department (“home” department). Applicants must have an A- average in their last two years of studies to be admitted in the collaborative program. The program includes a thesis on a topic relevant to biomedical engineering. All required courses should normally be completed within the first year of entering the program. Regulations governing student progress are defined by the collaborating departments.

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

Course requirements for the Collaborative Program are determined by the home and collaborating departments, but must include:

- Four half credits, which must include two of the following (1.0 FCE):
 - BME 1477H *Biomedical Engineering Project Design and Execution* (0.5 FCE)
 - BME 1478H *Coding for Biomedical Engineers* (0.5 FCE)
 - BME 1479H *Statistical Discovery Techniques for Biomedical Researchers* (0.5 FCE)
- BME 1010Y Graduate Student Seminar each year registered in the program.
- BME Health & Safety Training Workshop, WHMIS, and Biohazard and Safety.
- Faculty of Engineering 'Ethics in Research' Seminar (JDE1000)
- Completion of a research thesis.

* For examples of courses, please see Appendix G and H.

A student in the collaborative program is responsible for informing BME if they bypass to a PhD program in their home department and **confirming if they would like to remain in the collaborative program.**

3.6 Collaborative Program in Biomedical Engineering – PhD

Candidates register in the School of Graduate Studies through their collaborating departments. The program of study for students admitted into the PhD program will include a thesis in the field of biomedical engineering. Direct entry PhD students must also fulfill the master's requirements, as above.

Students will be required to take a minimum of two half-credit courses from the following:

- BME 1477H *Biomedical Engineering Project Design and Execution* (0.5 FCE)
- BME 1478H *Coding for Biomedical Engineers* (0.5 FCE)
- BME 1479H *Statistical Discovery Techniques for Biomedical Researchers* (0.5 FCE)

Applicants must have an A- average in their last two years of studies. All required courses should be completed within the first year, and no more than four years should be needed to complete all degree requirements. Regulations governing student progress are defined by the collaborating departments. Collaborating departments are listed in Appendix E. Students are also required to attend the Graduate Student Seminar Series (BME 1010Y/1011Y) from September to May of each year registered in the program.

3.7 Course Requirement Breakdown

Program	Required Courses	Specialty Courses
PhD students (w/ MASc)	2 out of the 3 required courses	0 courses required

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

PhD students (Direct entry or bypassed)	2 out of the 3 required courses	4 courses required
MASc	2 out of the 3 required courses	2 courses required

Students can use the table(s) above and below to guide them with their course selection under the specialty topic that interests them. Please note that these lists of specialty courses are not comprehensive. If students find a course from another department that they feel like could fit within their chosen specialty topic they can consult with their supervisor for appropriateness.

3.8 Specialty Topics & Courses

We have defined the specialty topics for the Biomedical Engineering program. They are

- Molecular engineering
- Imaging
- Nanoengineering
- Regenerative Medicine
- Microengineering
- Neural Engineering
- Rehabilitation Engineering
- Broad Biomedical Engineering (students without an engineering undergraduate degree)

Molecular Engineering: This set of classes introduces concepts and research developments in building devices and systems using molecules. In addition to the 2 required courses, the student is encouraged to take 4 of the 6 specialty courses.

Required courses: 2 out of the 3	Specialty courses: 4 out of the 6
BME1477 F	BME1459 W
BME1478 F	JCB1349 W
BME1479 F	JMB1050 W
	CHE1125 F
	CHM1104 F (CHM416)
	One APS-coded course (any course)

Imaging: This set of classes introduces concepts and research developments in molecular, cell, and tissue imaging as well as the use of imaging for diagnosing diseases. In addition to the 2 required courses, the student is encouraged to take 4 of the 6 specialty courses.

Required courses: 2 out of the 3	Specialty courses: 4 out of the 6
BME 1477 F	BME1459 W

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

BME1478 F	BME1460 W
BME1479 F	BME1462 W
	BME1466 W
	ECE1475 W
	One APS-coded course (any course)

Nanoengineering: This set of classes introduces concepts and research developments in the areas of nanotechnology and the building of systems and devices at the nanoscale. In addition to the 2 required courses, the student is encouraged to take 4 of the 6 specialty courses.

Required courses: 2 out of the 3	Specialty courses: 4 out of the 6
BME 1477 F	CHE1333 F
BME1478 F	MBP1410 W
BME1479 F	PCL1004 F
	JPB1022 F
	MIE1359 W
	One APS-coded course (any course)

Regenerative Medicine: This set of classes introduces concepts and research developments in the cell and tissue engineering and regenerative medicine. In addition to the 2 required courses, the student is encouraged to take 4 of the 6 specialty courses.

Required courses: 2 out of the 3	Specialty courses: 4 out of the 6
BME1477 F	BME1454 W
BME1478 F	MIE1359 W
BME1479 F	DEN1081 F
	JPB1022 F
	One APS-coded course (any course)

Microengineering: This set of classes introduces concepts and research developments using microfabricated systems to build devices and systems for analyzing, diagnostics, and implantable. In addition to the 2 required courses, the student is encouraged to take 4 of the 6 specialty courses.

Required courses: 2 out of the 3	Specialty courses: 4 out of the 6
BME 1477 F	CHE1125 F

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

BME1478 F	MIE1359 W
BME1479 F	BME1462 W
	BME1460 W
	One APS-coded course (any one course)

Neural Engineering: This set of classes introduces concepts and research developments in manipulation of the brain and engineering devices and systems for the brain. In addition to the 2 required courses, the student is encouraged to take 4 of the 6 specialty courses.

Required courses: 2 out of the 3	Specialty courses: 4 out of the 6
BME 1477 F	BME1472 F
BME1478 F	BME1802 W
BME1479 F	JEB1447 F
	JEB1444 W
	BME1473 F
	JPB1071 W
	One APS-coded course (any course)

Rehabilitation Engineering: This set of classes introduces concepts and research developments in rehabilitation technology for patients. In addition to the 2 required courses, the student is encouraged to take 4 of the 6 specialty courses.

Required courses: 2 out of the 3	Specialty courses: 4 out of the 6
BME 1477 F	BME 1473 F
BME1478 F	BME 1471 W
BME1479 F	REH 1510 W
	REH 5100 W
	BME1466 W
	One APS-coded course (any course)

General BME: This set of classes introduces the broad field of biomedical engineering to students who may have trained in a non-engineering field. In addition to the 2 required courses, the student is encouraged to take 4 of the 8 specialty courses.

Required courses: 2 out of the 3	Specialty courses: 4 out of the 8
BME 1477 F	BME1454 F

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

BME1478 F	BME1462 W
BME1479 F	JPB1022 F
	MBP1410 W
	BME1478 F
	LMP1206 W
	IMM1431 W
	One APS-coded course (any one course)

Mix and Match: We also leave it open to students as to what they want to learn. We encourage to mix and match classes where the student can pick classes that range building molecules and systems to technology to rehabilitate patients. In addition to the 2 required courses, the student is encouraged to take 4 courses that are offered by Institute.

Required courses: 2 out of the 3	Open courses: 4 out of all courses offered by BME
BME 1477 F	One APS-coded course (any one course)
BME1478 F	
BME1479 F	

NOTES

APS Courses: For a list of APS courses and descriptions, please go to

<https://gradstudies.engineering.utoronto.ca/professional-degrees/elite-emphasis/>

BME Courses: For a list of the BME courses and descriptions, please go to

<https://bme.utoronto.ca/current-students/course-calendar/course-descriptions/>

<https://bme.utoronto.ca/current-students/course-calendar/>

4.0 SEMINAR REQUIREMENTS

All MASc, MHSc, and PhD students are required to attend a **minimum of six graduate student seminars per semester** and **four invited seminar series talks per year** to fulfill BME 1010/1011Y requirements.

Graduate Student Seminar Series consists of two 25-minute presentations given by graduate students registered in both the BME and the Collaborative Specialization in Biomedical Engineering. Seminars are held every Wednesday, Thursday and Friday, with Distinguished Lectures being held the first Tuesday of every month.

This course provides students exposure to the breadth and depth of research activities in biomedical engineering; assists in the establishment of a biomedical engineering identity within the student population and externally to the University and to funding agencies; provides students with the opportunity of presenting their work in a formal setting, and receiving feedback (on both presentation style and content) prior to their final defence.

The primary goal of the BME Graduate Student Seminar Series is to provide practical experience and guidance in the clear, concise oral communication of research results to an audience of educated, though not specialist peers. This is an essential skill for anyone intending to seek a career in scientific research. The emphasis is different from a group-meeting or conference style talk to a specialist audience, but rather on the skills that are important ultimately for job talks or teaching situations.

Another important goal of the series is to provide a broad knowledge of all aspects of research undertaken by other students in BME. Attendance at these seminars is a great way to see the broad scope and reach of the graduate program in BME

A good, interactive audience is essential to the success of this series—so ask questions. Participation in this series is a core requirement of the BME graduate program. Students are expected to attend regularly and anyone failing to attend at less than eight seminars per academic year will be considered as non-participating.

Please be sure to notify your supervisor and supervisory committee members as soon as you are provided with a presentation date so that they can allocate time in their schedules to attend.

Abstract Submission

Concise abstracts (~ 250 words), including the names of your supervisor and supervisory committee members must be provided prior to your seminar and will be posted to the IBBME website. Signup for time slots will be sent via email.

5.0 COMMITTEE MEETINGS

All graduate students with the Institute of Biomedical Engineering are required to have at least **one committee meeting within the first year of registration**. Committee meetings should be initiated by the student or the supervisor. For the entire duration of the student's graduate program, committee meetings should be held at least **once per year** but may be as frequent as needed by discretion of the committee. Of note, Internal BME fellowships will require students to fulfill the annual committee requirement prior to applying to be competitive.

Note SGS General Regulations 7.5.2 Supervision and Satisfactory Progress:

- A student who fails to constitute a supervisory committee by the required time (within twelve months of registration) may lose good academic standing.
- A student is expected to meet with this committee at least once a year, and more often if the committee so requires.
- A student who, through their own neglect, fails to meet with the supervisory committee in a given year will be considered to have received an unsatisfactory progress report from the committee.

Satisfactory performance rating by the committee is a requirement for continued enrollment and funding in your graduate program. Committee meetings are a requirement of your graduate program and an account of the committee meeting, and its deliberations, form part of the student's official record and are reported on ROSI.

The SGS General Regulation can be found at the following page:

<https://sgs.calendar.utoronto.ca/general-regulations>

Students in the Collaborative program are also required to have one committee meeting every twelve months. If your home department has a similar requirement, then please give a copy of your committee meeting report to the BME Program Office in order to fulfill the BME committee meeting requirement.

5.1 Supervisory Committee

The supervisory committee must consist of at least three faculty members at the University of Toronto with current/active membership in the School of Graduate Studies. The committee must include the primary research supervisor (and co-supervisor if applicable), and two additional members of the graduate faculty:

Supervisor (and co-supervisor) + two committee member (with SGS appointments)

Committee members should be chosen after consultation with the student's primary research supervisor. All voting committee members must be members of the School of Graduate Studies (i.e. have an SGS appointment). Students are welcome to include non-voting members in the Progress Committee but must be aware of the requirement for voting membership for the final thesis defense. Committee members may be selected from departments outside of BME, though your supervisor must have a BME appointment. Students are cautioned that large committees can become problematic for scheduling of meetings and examinations.

Committee members' expertise should be appropriate to evaluate the breadth and depth of the proposed project to advise the student on all aspects of the project and ensure that the research goals are substantial and achievable within the designated timeframe of the student's program length. Committee members should make themselves available as mentors for the student to address curriculum

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

requirements, provide additional resources, resolve technical/experimental difficulties, offer career advice, etc.

For more information, consult the SGS Supervision Guidelines for Students

<https://www.sgs.utoronto.ca/resources-supports/supervision-guidelines/supervision-guidelines-for-students-section-4-responsibilities-of-the-student-supervisor-and-supervisory-committee/>

For a searchable list of BME faculty members please see the link below

https://sgs.calendar.utoronto.ca/search-sgs-faculty?field_graduate_departments_value=BME

For a searchable list of all faculty members who have full SGS appointment please see the link below

<https://facultyandstaff.sgs.utoronto.ca/gfm/faculty-members-a-z/>

Note: if someone is missing from this list who you believe has a full SGS appointment, please consult with the Graduate Unit so this can be verified

5.2 Committee Meeting Preparation, Presentation, Progress Report

Committee meetings require pre-planning. We suggest that students start preparation at least 5-weeks prior to the scheduled meeting. This will give students time to organize their written report and meeting presentation, coordinate time and locations with their committee, and prepare their committee meeting package. Below you will find the suggested timeline, workflow, and progress report format.

Suggested Timeline

Time (prior to meeting)	Task
5 Weeks	Start to prepare written report and meeting presentation
3 Weeks	Coordinate meeting time and location with faculty members
2 weeks	Distribute written committee report to all members
1 hour	Check that all required documents and forms are printed and prepared
During	Present research and answer questions from the committee
After	Scan fully signed meeting form and send to graduate office (electronically through email or drop-off in person)

Preparation for your Supervisory Committee Meetings

Workflow overview

1. Student initiates and coordinates meeting logistics.

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

2. Student prepares written report (up to 20 pages, all inclusive) for the committee. The following report format is recommended:
 - a. 3 pages of single-spaced text
 - b. 3 figures of results (multi-panels acceptable if appropriate)
 - c. 1 page of references
3. Student prepares presentation for the committee (max. 20 minutes).
4. Student prepares and consolidates meeting documentation.
5. Student returns signed and completed documentation to the graduate office.

Please see the recommended agenda in Appendix D.

Bring the following documents to your committee meeting

1. A copy of the previous committee meeting form – Required (except for the first meeting)
2. A copy of the student's most recent academic transcript (unofficial) – Required
3. A supervisor committee meeting form – Required
 - Available here: <https://bme.utoronto.ca/current-students/committee-meeting/>
4. Physical print copies of the student's written report for all members - Optional

IMPORTANT: The student is responsible for printing and retaining meeting documents and submitting them to the Graduate Office for degree records and internal award(s) consideration.

You are required to submit your research progress report to the members of the committee a minimum of **two weeks in advance** of the first committee meeting. The initial progress report should include background information regarding previous research carried out in the field, what progress has been made to date with the student's research project, any results achieved, and future work to be done. Charts and figures should be included in the report. For subsequent committee meetings, you will need to ensure that your progress report addresses the concerns raised by the committee during the previous meeting (or during your PhD Qualifying Exam, if applicable).

At the meeting, you will give a 20-minute presentation where you introduce your research topic, the goals of your project, the research hypothesis (if applicable), and the research methodology/approach. You should also provide a timeline for the completion of your project. You should expect to receive critical feedback from the committee about your proposed project plan.

For the breakdown of the critical components of your proposal please see Appendix B

Remote Committee Meetings

Depending on social distancing rules and guidelines, students may not be able to have their committee meetings in person during this 2020-21 academic year. If the social distancing rules still prohibit group gatherings by the time students are ready to have your committee meeting, students may request Bb Collaborate (video conferencing) for virtual meetings, defenses, group work, etc. Email the Graduate Office with your UTORmail for access.

Students still need to obtain signatures from all their committee members. Ideally, all participants should digitally sign the pdf form. If faculty members are unable to sign/edit the pdf, consensus requires a response from each committee member, which could stand in place of wet signatures. The Chair (or student) should email the meeting form to the Graduate Office and copy (cc) all participants with explicit instruction for members to respond. Then all committee members should confirm their approval of the form in a response to the Graduate Office using REPLY ALL.

5.2 Bypass examination

The bypass examination is for students in the MASc and MHSc programs who wish to transfer into the PhD. A PhD Qualifying Examination may also serve as a bypass exam. Bypass exams must be completed within 14 months from the start date of the student's MASc or MHSc program. A first Supervisory Committee meeting must be held 3-4 months before the bypass examination (during the first year).

The bypass examination will consist of the following:

1. A progress report detailing progress to date which also includes a PhD research proposal. This report is to be thirty pages or less; and
2. A 20 minute presentation
 - a. Thesis scientific background
 - b. High-level overview of thesis objectives, hypotheses, methods, etc.
 - c. Detailing of results, issues, timelines, etc.
 - d. Summarize and contextualize future directions

Preparation for your Bypass Examination:

Students are required to submit a research proposal/report to the members of the committee a minimum of **two weeks in advance** of the examination. Students are responsible for preparing and delivering the necessary package of documents to the Chair of their committee.

Bring the following documents to your examination

1. A copy of the previous committee meeting form – Required (except for the first meeting)
3. A copy of the student's most recent academic transcript (unofficial) – Required
4. PhD Qualifying/MASc Bypass Exam Form – Required
 - Available here: <https://bme.utoronto.ca/current-students/academic-progress/>
5. Physical print copies of the student's written report for all members - Optional

Assessment of the candidate will be based on the oral presentation, the written proposal, and the candidate's performance during questioning by the committee (See Section 5.3). The candidate will be expected to answer questions relative to the research proposal, background required to undertake the work and potential applications. The emphasis of the examination will be on the research proposal, not on undergraduate level background. Students are expected to have completed all the appropriate course requirements by the date of the bypass examination.

Bypass Examination Committee

Each committee must have:

1. A supervisor, and co-supervisor if applicable;
2. Two regular supervisory committee members who hold an SGS appointment;
3. An external-external examiner (with an SGS appointment) not associated with supervision of the project but knowledgeable in the field (I.e. from a different department)

All voting committee members must hold an appointment with the School of Graduate Studies. See links in 5.0 COMMITTEE MEETINGS section.

5.3 PhD Qualifying Examination

Doctoral students are required to conduct a qualifying exam to ensure that they possess the knowledge, skills, and abilities required to successfully complete the PhD program. The PhD qualifying exam may also serve as the bypass exam for students from the MASc program who wish to transfer to the PhD program. It is recommended that the qualifying exam be held by the twelfth month, but it must be completed by the fourteenth month of study at the latest. Successful completion of the qualifying exam is a condition of continued program registration. Thus, it is recommended (albeit optional) that students hold a supervisory committee meeting three months before the exam date to receive guidance on preparation, procedures, and expected outcomes of the qualifying exam.

This exam will consist of the following:

1. A PhD research proposal of not more than thirty pages; and
2. Defense of the research proposal including a 20-minute oral presentation on the proposed research and defense.

Preparation for your PhD Qualifying Examination:

Students are required to submit a research proposal/report to the members of the committee a minimum of **two weeks in advance** of the examination. Students are responsible for preparing and delivering the necessary package of documents to the Chair of their committee.

Bring the following documents to your examination

1. A copy of the previous committee meeting form – Required (except for the first meeting)
2. A copy of the student's most recent academic transcript (unofficial) – Required
3. PhD Qualifying/MASc Bypass Exam Form – Required
 - a. See PhD Qualifying Exam tab: <https://bme.utoronto.ca/current-students/academic-progress/>
4. Physical print copies of the student's written report for all members - Optional

The PhD qualifying exam committee should evaluate the student's background preparation and ability to undertake an original and conclusive scientific investigation that has the potential to develop into a full PhD thesis (ideally, three first author papers).

Specifically, the committee will:

- 1) evaluate student's ability to articulate a clear hypothesis or a clear overall goal (e.g. create a novel design, solve a specific problem, develop a new technology, challenge a current paradigm or practice, address a critical bottleneck in the field);
- 2) evaluate student's ability to plan and design critical experiments to prove or disprove the hypothesis or to achieve the overall goal stated;
- 3) evaluate student's ability to interpret experimental data/outcomes and appreciate the limitations of the approaches used;
- 4) evaluate student's familiarity with relevant literature and/or understanding of scientific concepts relevant to the project;
- 5) take into account the student performance in graduate courses.

The presentation of some preliminary data that supports the hypothesis or suggests feasibility is usually expected, but is not the main criterion for assessing students. Candidate assessment will be based on the oral presentation, the written proposal, and the candidate's performance during questioning by the committee. The evaluation form is available through the Program Office. A vote will be held to recommend or not recommend that the candidate continue in the PhD program.

Students who do not successfully complete their Qualifying Exam may be given an opportunity for a second Qualifying Examination within six months. The Program Office will recommend that students who failed their second attempt at the PhD qualifying examination withdraw from the PhD Program (see Section 8.8). If the student does not withdraw from the program, the Program Office will recommend that SGS terminate the student's enrolment in the program. The latter has more serious consequences than a withdrawal since the termination status will be recorded permanently on the student record. In general, the same consequences can apply when a student is not in good academic standing.

Moreover, students who failed their second qualifying exam are not in good academic standing and are not eligible for transfer to the MASc program. Decisions of the examination committee are final; however, they can be appealed (see Section 8.19). Candidates who have failed their PhD Qualifying Exam twice will not be considered for a transfer to the MASc program, as they are no longer in good standing (See section 8.6).

Qualifying Examination Committee

Each committee must have:

1. A supervisor, and co-supervisor if applicable;
2. Two regular supervisory committee members who hold an SGS appointment;
3. An external-external examiner (with an SGS appointment) not associated with supervision of the project but knowledgeable in the field (I.e. a member from a different department)

All voting committee members must hold an appointment with the School of Graduate Studies. See links in 5.0 COMMITTEE MEETINGS section.

For the recommended PhD Qualifying/MASc Bypass Exam Agenda please see Appendix D

5.4 Collaborative Program Committee Meeting Requirements

All students who are in the Collaborative Program with the Institute of Biomedical Engineering Program are required to have at least one committee meeting within twelve months of registration and annually every year thereafter. In general, your home department's committee meeting schedule will satisfy this requirement. However, in the event that the student's home department does not require an annual Progress Committee meeting during the course of their program, students will be required to hold annual meeting, as scheduled for our core students, to satisfy the BME requirement.

6.0 ENROLMENT AND COURSE WORK

You should consult your primary research supervisor before you make a decision on which courses to take to ensure that the courses chosen are interesting and beneficial for your project/degree program.

ACORN

Students use ACORN to enrol into courses. For help on using ACORN, see <https://help.acorn.utoronto.ca/how-to/> for more information.

The use of ACORN to enrol in courses means that you agree to abide by all of the academic and non-academic rules and regulations of the University, the School of Graduate Studies, and the Institute of Biomedical Engineering. It also means that you agree to assume the obligation to pay academic and incidental fees according to the policies and requirements of the University of Toronto.

6.1 Adding and Dropping Courses

BME Courses

Students who wish to add or drop BME courses after enrolment must complete an Add/Drop Form. The form must be emailed to the Graduate Office (grad.bme@utoronto.ca).

Courses from Other Departments

Some courses will require instructor approval, but you still make the requests on ACORN. Once the course instructor(s) approve the list, your status will change from 'INT' to 'APP'. Courses from other departments can be taken with approval from your primary supervisor. However, BME does not have control over other departmental courses, so you will have to find out how to get enrolled. You may consider courses offered at any of the three campuses, regardless of where you are based. If a course you are interested in is full, email the lead instructor to see if they could accommodate another student. Pending instructor approval, you may be added to the class; however, please do not request anything that you are not sure about, just to “hold a space” in the class, which is a common strategy in undergraduate courses that should not be used at the graduate level with small class sizes. Taking up spaces on class lists really hurts other students who may want in. Only request a course that you are certain that you want to take.

Please note: student will not be able to add or drop courses after the prescribed SGS deadlines of the department.

See the link to the Add/Drop form below

<https://www.sgs.utoronto.ca/wp-content/uploads/sites/253/2019/06/AddDropCourses.pdf>

See the link to the 2020-21 Sessional Dates below

<https://sgs.calendar.utoronto.ca/sessional-dates>

6.2 Grading and Evaluation

Students normally receive a grade report for all courses completed within a given term. These reports are not official transcripts. Students requesting official transcripts must order them from the University of Toronto Transcript Centre located in the Sidney Smith Building at 100 St. George Street. Students may also obtain grades from the Student Web Service at <http://www.rosi.utoronto.ca>.

Additional information relating to grading scales and grading policies are found in the SGS Calendar under the section titled Graduate Grading and Evaluation Practices Policy.

6.3 Extra Courses Not Required for the Degree

Enrolments for additional courses not required for the degree are subject to the same regulations as those in the degree program. Students should check with the host department about course enrolment procedures.

6.4 Academic Standing and Satisfactory Progress

All graduate programs are composed of a number of academic requirements that include graduate courses and other academic activities, including participation in student seminars, annual committee meetings and student research. Students are required to maintain a minimum grade performance of A- in all graduate courses to be eligible for most scholarships. Students must maintain satisfactory progress in their research in order to remain in *Good Standing* with SGS and BME during completion of their degree program.

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

Progress in your degree program will be assessed each year and is measured by:

- Performance in your courses (the passing mark is B- in all courses, i.e. 70% and most graduate scholarships require a minimum GPA of A- or 3.7 for eligibility)
- Supervisory Committee Meetings (yearly or more frequently)
- Satisfactory progress in research

After each session, the Departmental Graduate Studies Committee will consider the cases of those students who have failed one graduate course. Students with one failure who are allowed to proceed will have their cases reviewed by the Program Office. Students who find themselves in this situation are strongly encouraged to contact Accessibility Services (www.accessibility.utoronto.ca) to determine if accommodations can be put in place to meet specific needs they may have. The Program Office's policy is to recommend to SGS the termination of the registration of students who at any time accumulate two failing grades. Consequently, failing courses can have very severe consequences and difficulties should be addressed as soon as possible.

Students whose research work is unsatisfactory in the opinion of their supervisory committee, and/or have not completed their degree requirements after six sessions (24 months) and/or have not held an annual committee meeting, may also face termination of their registration in their graduate program. The committee has complete authority to recommend the termination of a student's degree program if adequate progress is not demonstrated.

Failure to remain in good standing can affect student's eligibility for internal and external funding, registration and continuation in your program.

Please review SGS policy on Program Progress and Good Standing:

<https://www.sgs.utoronto.ca/academic-progress/manage-your-program/maintaining-good-standing/>

7.0 THESIS REQUIREMENTS

7.1 Biomedical Engineering Program: MASc

Completion of the MASc in Biomedical Engineering requires the submission of a thesis on an original body of work in the field of biomedical engineering and an oral defense of that research. It is highly recommended to have a Supervisory Committee meeting a few months before completing the thesis and before scheduling the departmental defense. A departmental defense examination will not be scheduled if the student has never had a committee meeting during his program.

Permission to Write

The thesis writing process formally commences with permission granted by the supervisory committee and the thesis itself could take several months to draft. Schedule a supervisory committee meeting to discuss thesis writing as soon as reasonably practicable.

Permission to Defend

Once a draft of the thesis is completed to the satisfaction of the primary supervisor (and co-supervisor if applicable), and after obtaining their explicit consent, the student should submit the thesis to all members of the supervisory committee for evaluation and decision on whether the thesis is ready for defense. Committee members should be given sufficient time (typically a month) to provide analytical and constructive commentary on the thesis.

After the appropriate review period has passed, the student should call a supervisory committee meeting. At this meeting, the committee should provide the student with feedback and instruction for thesis corrections, modifications, and next steps in the graduate program. The committee should also notify the student of whether the thesis is ready for defense. If a decision is made to move forward with defense, then the committee should take this meeting as an opportunity to discuss defense procedures, timelines, expectations, and recommend internal-external examiner(s). Otherwise, the student should repeat this process until permission to conduct the departmental defense is granted by the supervisory committee.

The internal-external examiner may be a faculty member of the candidate's graduate unit and/or a faculty member of other departments, centres, or institutes of the University of Toronto. The internal-external member must have graduate faculty membership and expertise relevant to the student's research topic but must not have been involved in supervision of the thesis (i.e. not a member of the student's supervisory committee).

Departmental Defense

Examination of the candidate will be based on both the oral presentation and the written thesis. The student is responsible for coordinating the departmental defense with guidance from the primary supervisor.

In order for the thesis to be properly appraised, students are requested to submit the thesis to the examination committee three weeks before the exam. Failure to do so may result in cancellation of the examination. Students are responsible for the examination meeting arrangements and coordinating meeting time and location with the defense committee. They must also put together all the required documents and forms for the defense and make this available during the examination.

Bring the following documents to your examination

6. A copy of the previous committee meeting form – Required (except for the first meeting)
7. A copy of the student's most recent academic transcript (unofficial) – Required
8. The Departmental Defense Form – Required
 - See Departmental Defense tab: <https://bme.utoronto.ca/current-students/academic-progress/>
9. Physical print copies of the student's written report for all members - Optional

Departmental Defense – Examination Committee

The examination committees are made up of the MASc Progress Committee plus one independent examiner. Each committee must have:

- 1) A supervisor and co-supervisor if applicable;
- 2) Two regular supervisory committee members who hold an SGS appointment;
- 3) An internal-external examiner (with an SGS appointment) not associated with supervision of the project but knowledgeable in the field.

The Chair of the departmental defense may be any member of the supervisory committee. The chairperson should ensure that all members adhere to the agenda and maintain order, and that the defense is conducted fairly such that all members are given an appropriate amount of time to question the candidate, and that the defense is adjourned in a timely manner.

All voting committee members must hold an appointment with the School of Graduate Studies.

On the basis of the thesis and the Departmental defense, the committee may recommend that:

- The thesis may be accepted as is and the candidate be awarded the MASc degree;
- The candidate be awarded the degree subject to minor corrections of the thesis;
- The candidate be awarded the degree subject to minor modifications of the thesis;
- The candidate be given an opportunity to address shortcomings in his/her thesis or defense with the objective of a reconvened oral examination to be held at a later date;
- The candidate withdraws from the program.

Thesis Corrections

Those committee members who find the thesis acceptable must also indicate whether the thesis is acceptable as is, or requires minor corrections or minor modifications.

- Minor corrections involve typographical errors, errors in punctuation, or problems in style; they must be correctable within one month.
- Minor modifications are more than changes in style and less than major changes in the thesis. A typical example of a minor modification is clarification of textual material or the qualification of research findings or conclusions. Minor modifications must be feasibly completed within three months.

For the procedure to be followed in case of a split vote, see the explanation on the voting ballot.

Submitting your Thesis

The thesis will be electronically archived by both the UofT Library and LAC in their secure digital repositories. The thesis is also submitted, by SGS, to ProQuest for publication with Abstracts International.

<http://www.sgs.utoronto.ca/currentstudents/Pages/Electronic-Thesis-Submission.aspx>

7.2 Biomedical Engineering Program – PhD

Completion of the PhD in Biomedical Engineering requires the submission of a thesis on an original body of work in the field of biomedical engineering and an oral defense of the research. The thesis is to be formatted as described by the School of Graduate Studies.

7.3 Permission to Write

The thesis writing process formally commences with permission granted by the supervisory committee and the thesis itself could take several months to draft. Schedule a supervisory committee meeting to discuss thesis writing as soon as reasonably practicable.

7.4 Permission to Defend

Once a draft of the thesis is completed to the satisfaction of the primary supervisor (and co-supervisor if applicable), and after obtaining their explicit consent, the student should submit the thesis to all members of the supervisory committee for evaluation and decision on whether the thesis is ready for defense. Committee members should be given sufficient time (typically a month) to provide analytical and constructive commentary on the thesis.

After the appropriate review period has passed, the student should call a supervisory committee meeting. At this meeting, the committee should provide the student with feedback and instruction for thesis corrections, modifications, and next steps in the graduate program. The committee should also notify the student of whether the thesis is ready for defense. If a decision is made to move forward with the defense, then the committee should take this meeting as an opportunity to

discuss the defense procedures, timelines, expectations, and recommend internal-external examiner(s). Otherwise, the student should repeat this process until permission to conduct the departmental defense is granted by the supervisory committee.

The internal-external examiner may be a faculty member of the candidate's graduate unit and/or a faculty member of other departments, centres, or institutes of the University of Toronto. The internal-external member must have graduate faculty membership and expertise relevant to the student's research topic but must not have been involved in supervision of the thesis (i.e. not a member of the student's supervisory committee).

7.5 Departmental Defense

The PhD candidate will undertake up to two examinations in completing the thesis requirement for the PhD in the Biomedical Engineering Program - a Departmental Defense examination and the Senate Examination (Final Oral Exam). In both cases the candidate will be examined on both the oral presentation and the written thesis.

The Departmental Defense is a public event. Peers and faculty are invited to attend but will be asked to leave the exam room during deliberation. The candidate will be examined based on a 20 minute presentation of their work and will be expected to answer questions relative to the research thesis, background and future work.

7.6 Departmental Defense – Examination Committee

The examination committees are made up of the PhD Progress Committee plus one independent examiner. Each committee must have:

- 1) A supervisor, and co-supervisor if applicable;
- 2) Two regular supervisory committee members;
- 3) An internal-external examiner (with an SGS appointment) not associated with supervision of the project but knowledgeable in the field.

All voting committee members must hold an appointment with the School of Graduate Studies.

On the basis of the thesis and the Departmental oral defense, the committee may recommend that:

- The candidate be allowed to proceed to the Senate Examination;
- The candidate be given an opportunity to address shortcomings in his/her thesis or defense with the objective of a reconvened Departmental oral defense being held at a later date; or
- The candidate withdraws from the program.

The Departmental Defense is optional but highly recommended. Students may opt to go straight to the Final Oral Exam with the recommendation of the supervisory committee and authorization from the Director or Associate Director of BME. Students must provide a written request to the Program Office requesting to proceed straight to the Final Oral Exam.

For the recommended departmental defense agenda please see Appendix D.

7.7 Final Oral Examination (FOE)

All PhD students must defend a thesis at a Final Oral Examination organized by their graduate unit with the support of the School of Graduate Studies. In compliance with SGS regulations, each graduate unit sets their own timeline requirements. BME requires **at least 3 months of advance notice** to prepare for your PhD final oral exam. This timeline starts with submission of the PhD External Appraiser Approval Request Form. The reason for this timeline requirement is to account for communication delays, national and international holidays, travel arrangements, and the coordination of multiple exams in parallel at the institute.

Note: Due to office and SGS closure on holidays:

- Do not book your exam after the second week of December.
- Do not book your exam before the third week of January.

See the “PhD Final Exam” tab for an overview of the FOE timeline & exam procedures:

<https://bme.utoronto.ca/current-students/academic-progress/>

7.8 Examination Committee – FOE

The FOE committee must include at least four, but no more than six, voting members: one to three of the voting members will have served on the candidate's supervisory committee, and at least two voting members will not have been closely involved in the supervision of the thesis. Eligible for inclusion in the latter group are the external appraiser (in person or by audio connection), the internal-external examiner from the departmental defense, or members of the graduate faculty of the candidate's graduate unit, and members of the graduate faculty of other departments, centers, or institutes of the University.

- 1) A supervisor, and co-supervisor if applicable;
- 2) One – two regular supervisory committee members;
- 3) An internal-external examiner (with an SGS appointment) not associated with supervision of the project but knowledgeable in the field. This can be the internal-external from the departmental defense.
- 4) The external appraiser or a second independent examiner should the external appraiser not be able to participate.
- 5) SGS will appoint a non-voting chair to the examination committee.

7.9 Embargo on PhD thesis publication:

Publication of the thesis by the University of Toronto is a requirement of the PhD degree. Delaying its publication is viewed as an exceptional case. The Program Office will limit the embargo to a maximum of one year.

The justification for the embargo should be approved by the BME Director and SGS and this process requires using a restrict thesis release form (<https://www.sgs.utoronto.ca/academic-progress/program-completion/electronic-thesis-submission/>).

8.0 GENERAL INFORMATION

8.1 Supervision: What you should expect

The University has recently undertaken an initiative to assist students in receiving strong supervision during their graduate degree. You should be sure that you are familiar with the SGS guidelines for Graduate Supervision.

<https://www.sgs.utoronto.ca/resources-supports/supervision-guidelines/supervision-guidelines-for-students-section-4-responsibilities-of-the-student-supervisor-and-supervisory-committee/>

8.2 Safety

It is mandatory for all registered students to attend the Health & Safety Training course at the beginning of the program, and take the WHMIS refresher course annually thereafter. You will be prohibited from starting your research until this requirement is completed. This is in addition to any safety sessions you may be required to undertake at your lab's physical location. You should be aware of your responsibility under the Safety Act, which governs safety in the workplace in Ontario. You should also be aware of the Biohazard, Laser, and Radiation protocols particular to your research and research environment.

8.3 Ethics

All of the research undertaken in BME is covered under several ethical review programs. You must be aware of guidelines on Research Involving Human Subjects and attend ethics courses as required.

<https://www.sgs.utoronto.ca/policies-guidelines/research-involving-human-subjects/>

8.4 Intellectual Property and the Graduate Student

Students must be aware of the issues around Intellectual Property and their research. Please refer to the Faculty of Medicine (www.facmed.utoronto.ca) and the SGS websites (www.sgs.utoronto.ca) for updates and guidelines.

8.5 Plagiarism and other Cases of Academic Misconduct

Students in graduate studies are expected to commit to the highest standards of integrity and to understand the importance of protecting and acknowledging intellectual property.

The University's policy on academic misconduct is found in the *Code of Behaviour on Academic Matters* can be found on the SGS website under Information for Students. It is the student's responsibility to be aware of these policies. In particular, make sure you know exactly what is considered plagiarisms in the context of your progress reports, proposal, manuscripts and thesis and how to avoid it (<http://advice.writing.utoronto.ca/using-sources/how-not-to-plagiarize/>).

<https://www.sgs.utoronto.ca/policies-guidelines/academic-integrity-resources/>

8.6 Transfer to Other Programs (including transfer from PhD to MASc)

Transfer from PhD to MASc

This option is available to students who have not already completed an MASc in Biomedical Engineering at the University of Toronto, who are in *Good Standing* in their PhD program but who feel that the length and expectations of the PhD program are no longer compatible with their career plans. Students transferring from the PhD to the master's program must complete all of the normal MASc degree requirements (including courses), or their equivalent, in order to be awarded the master's degree. These transfers must be approved by the Program Office and the SGS Vice-Dean, Students. Students who transfer from the PhD to the master's program will not be permitted to transfer subsequently to the PhD program within the same graduate unit unless approved by the SGS Admissions and Programs Committee.

<http://www.sgs.utoronto.ca/calendar/Pages/Degree-Regulations.aspx>

Note that PhD candidates who have twice failed their PhD Qualifying Exam will not be considered for a transfer to the MASc program since they are no longer in good standing.

Transfer to/from another Department:

Students who wish to transfer from another department after registration must obtain necessary approvals from his or her supervisor(s) as well as the Graduate Coordinators from the departments. Transfers will normally not be permitted after one year of registration in a program. If a new research supervisor is being selected, the supervisor must be a full member of the School of Graduate Studies. A letter of acceptance is also required from the supervisor accepting the student into his/her research lab and financial responsibility.

8.7 Change of Primary supervisor

In exceptional circumstances, a student may wish to change his/her primary supervisor. In such a case, the student should discuss this plan with the Graduate Coordinator so that all pros and cons and all other possible other alternatives have been considered. Normally, the Program Office will give the student a defined, but limited, period of time to identify a new supervisor (who may be from within or outside of BME). In addition, a student can decide to take a one semester standard leave of absence during that period, if eligible. Note that it is ultimately the responsibility of the student to identify and establish a relationship with their intended research supervisor; the student may request some assistance from the Program Office during this process but the Program Office cannot simply transfer a student from one supervisor to another. Therefore, a change of supervision should be attempted only when there are no other alternatives since there is no guarantee that it will be possible.

If the student unilaterally decides to stop working with his/her current supervisor and a new supervisor cannot be identified during the time period prescribed by the Graduate Coordinator, then the Program Office may recommend that the student consider withdrawing from his/her

graduate program in BME (see Section 8.8) as graduate students must have a supervisor in order to meet the requirements of their program.

(<http://www.sgs.utoronto.ca/Documents/Supervision+Guidelines.pdf>).

8.8. Program Withdrawal and Termination of Registration

The Program Office may request to SGS the termination of the registration of students who have failed two or more graduate courses, or have failed two attempts at their PhD Qualifying Examination or have showed a lack of research progress in two subsequent committee meetings. Normally, the Program Office will give student the chance to voluntarily withdraw from the program within a defined time period before the request for termination is formalized with SGS (a termination status can have serious consequences as it is permanently recorded on student transcripts). However, it is important to note that termination can be appealed to the Graduate Academic Appeals Board of SGS but that withdrawal cannot. Students in this situation are encouraged to obtain additional information about appeals and withdrawals from SGS in order to make their decision.

<https://www.sgs.utoronto.ca/policies-guidelines/termination-of-registration-info-for-students/>

8.9 Change of Address

Students are responsible for updating any address and/or telephone changes via the Student Web Services at <http://www.rosi.utoronto.ca>. In addition, students should also inform the Program Office and the Administrative Office in writing. We will make the necessary changes in the payroll system.

8.10 Office Space and Keys

Office or desk space is usually assigned to students upon registration. Inquiries related to office space allocation should be directed to the Operations Assistant. BME students who require keys for their offices or laboratories should contact the BME Administrative Office, Room 407 of the Rosebrugh Building.

8.11 Mailboxes

There is one mailbox located in Room 407 of the Rosebrugh Building for any personal mail that may arrive for students.

8.12 Student Cards and E-mail Address

The U of T TCard is an access card for services on campus. Email service, wireless network, and access to the Learning Portal will be available upon receipt of your TCard and authentication of your UTORid. You may obtain your TCard at any one of the three campus locations. Check out TCard News for dates when you are eligible to pick up your TCard.

Proof of citizenship, identification and your offer of admission letter or student number are required in order to receive a TCard. For detailed information about the documentation required to obtain a TCard, visit <http://tcard.utoronto.ca>

Before arrival on campus, you can use your JOINid to access your student account on ACORN to update contact information. Upon receipt of your TCard, you will be given a Secret Activation Key to promote your JOINid to a fully valid UTORid.

Your email account at U of T is associated with your UTORid. It is important to activate your UTORid to receive communications from U of T, SGS, and the Graduate Awards Office.

See also: [UTmail+](#), an email and calendaring service for students and alumni.

Your University of Toronto email address is the official contact point for all University-related announcements and notices posted by the School of Graduate Studies and your Graduate Unit. Please note that, for security purposes, Faculty and Program Offices are prohibited from opening emails that do not come from a University of Toronto account. You are responsible for ensuring that this account is checked regularly.

8.13 Purchases

Students making a purchase should consult with their supervisors ensuring that proper approvals are granted prior to purchasing.

8.14 Fax and Photocopy

Fax and photocopying machines are located in the BME Graduate Student Office, Room 410 of the Rosebrugh Building. Students using the photocopying machine must enter login identification assigned by the Administrative Office.

8.15 Payroll

Students registered in the Biomedical Engineering Program or the Clinical Engineering Program should direct all payroll inquiries to the BME Administrative Office; Collaborative students should contact their home department's business officer for information.

8.16 Leaves of Absence and Student Personal Time Off

Guidelines on Leaves of Absence (<http://www.sgs.utoronto.ca/calendar/Pages/Registration-and-Enrolment.aspx>)

Graduate students whose programs require continuous registration may apply to their Graduate Coordinator for a one-session to three-session leave during their program of study for:

1. **serious health or personal problems** which temporarily make it impossible to continue in the program; or

2. **parental leave** by either parent at the time of pregnancy, birth or adoption, and/or to provide full-time care during the child's first year. Parental leave must be completed within 12 months of the date of birth or custody. Where both parents are graduate students taking leave, the combined total number of sessions may not exceed four.

Once on leave, students will not be registered, nor will they be required to pay fees for this period. In general, students on leave may not make demands upon the resources of the university, attend courses, or expect advice from their supervisor. As an exception, students on leave for parental or serious health reasons who wish to consult with their supervisor or other faculty are advised to make special arrangements through their department. Students on leave will not be eligible to receive University of Toronto financial assistance. In the case of other graduate student awards, the regulations of the particular granting agency apply.

Students may make application for a leave by completing the leave of absence form (<http://www.sgs.utoronto.ca/Documents/Leave+of+Absence.pdf>) and submitting it to the BME Program Office for approval. The form is then sent to the School of Graduate Studies for processing. The termination date of the degree program will be extended by the duration of the leave taken, i.e., one, two, or three sessions as appropriate. Except for parental leave or in exceptional circumstances, it is not expected that a student will be granted more than one leave under the terms of this policy. Normally the start and finish of the leave would coincide with the start and end of a session.

Guidelines on Personal Time Off

It is recognized that many graduate students conduct their research almost exclusively within a laboratory setting, where they may or may not have control over their hours and the flow of the research program. Students are not employees and therefore have no rights to employee benefits, including paid vacation entitlement. However, it is recognized that in order for a graduate student to reach their full potential and achieve academic excellence and maintain a healthy work/life balance, they benefit from some personal time off or vacation. There are SGS policies and procedures in place for students who require a leave of absence for parental, personal or medical reasons. However, there are no University or SGS policies regarding graduate student personal time off or vacation. The following guidelines for faculty and graduate students provide a framework for reasonable expectations. As a general rule, students might reasonably expect up to three weeks (fifteen working days) per year in personal time off, plus statutory holidays, under the following conditions:

- Time off provisions should be negotiated, in a clear and transparent manner, between the supervisor and the graduate student.
- Time off should not compromise the research program and/or the student's graduate studies. Students must ensure that laboratory work, experimentation and other time-sensitive activities are either completed, or arrangements made for others to continue ongoing work.
- Consideration should be given to when the building or lab is closed (i.e. winter holidays) when taking time off.
- Time sensitive deadlines (i.e. award applications, abstract submissions) must be taken into consideration.

Institute of Biomedical Engineering
2020-21 Graduate Studies Handbook

- Time off cannot be carried forward from year to year.
- Time off should be requested as far in advance as possible.
- The student and supervisor should be able to maintain contact as appropriate if the student is away for an extended period.
- Given that students receive remuneration as a stipend, not salary, the stipend continues, unaffected by personal time off.
- Attendance at social activities within the academic community (departmental picnic, etc.) or scientific meetings do not fall under the category of personal time off.
- Sick leaves or absences for health reasons must be documented and do not fall under category of personal time off.

8.17 Graduate Course Grade Scales

The Table below presents the grade scale for graduate courses. BME requires the completion of every course taken for graduate credit with a least a mark of B- (or 70%). However, eligibility for most graduate scholarships requires a GPA of at least A-. A grade below 70% is inadequate and indicated on the transcript by FZ (fail) and cannot be counted for credit. A student who has received an FZ in a course should speak with the Graduate Coordinator to get the permission to either repeat the course or substitute another one. This permission may be given to the student if his/her marks in other course(s) taken is/are above the minimum required. Normally, a student will not receive this permission more

<i>Graduate</i>	
Truncated Refined Letter Grade Scale	Numerical Scale of Marks
A+	90 - 100%
A	85 - 89%
A-	80 - 84%
B+	77 - 79%
B	73 - 76%
B-	70 - 72%
FZ**	0 - 69%

**FZ = Fail

than once. If a student fails two courses, the Program Office will recommend to SGS termination of student's registration in the program (see Section 6.4).

<http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/grading.pdf>

8.18 Policy on Extension and Late Withdrawal Requests for Graduate Courses

A request for an Extension in a graduate course should be sent to the Instructor **within two business days after deadline** for completing that particular component of the course. The request must be supported by medical documentation (see <http://www.illnessverification.utoronto.ca>), if the reason for the request is due to an illness.

If the extension required for the completion of the coursework is beyond the original SGS deadline to submit the marks for that course (e.g. past the end of the session) then the request will have to be sent to the Program Office. Students will petition the graduate unit for extensions, using a standard form provided by SGS (<https://www.sgs.utoronto.ca/wp-content/uploads/sites/253/2019/06/Program-Extension-Current-Regulations.pdf>).

We strongly recommend that students request an extension instead of a late withdrawal for course whenever applicable. A request for a late withdrawal for a course should be sent to the Program Office as soon as possible during the session in which the course is offered. Such requests are approved only for exceptional circumstances such as a very serious illness or bereavement. These requests must be supported by appropriate medical documentation (<http://www.illnessverification.utoronto.ca>), if the reason for the late withdrawal is due to a medical condition. The Program Office is not likely to approve a request for a late withdrawal after the final course marks have been communicated to the students.

Requests for Extensions or Late Withdrawals may be granted or denied by the Program Office. In the case of an extension, if the course is never completed by the deadline prescribed by the Program Office, then the report of INC (incomplete) is permanently recorded on the student's transcript.

8.19 Academic Appeals (for a course mark, course failure or other academic decisions)

Note that decisions made by Instructors, Supervisors, Supervisory Committees and the Program Office can be appealed. Academic appeals are initiated within BME (with the exception of appeals related to Termination of Registration and Final Oral Examination failure which are appealed directly at the SGS level). When possible, the Program Office or the Director will provide assistance to try to settle the appeals informally between the parties involved (e.g. student, instructor, supervisor, supervisory committee).

If a student wants to appeal a decision made by the Program Office, the first step in the process is to send a notice of appeal (available at the bottom of the SGS Forms and Letter Requests page) to the

Professor chairing BME's Graduate Department Academic Appeals Committee (GDAAC). The GDAAC will review the case and will make a recommendation to BME's Director (or his/her substitute) who then makes a decision. The appeal can then subsequently be taken to the Graduate Academic Appeals Board (GAAB) of SGS, and then to the Academic Appeal Committee of the Governing Council of the University.

<https://sgs.calendar.utoronto.ca/general-regulations#10>

8.20 BESA (BioEngineering Student Association)

The [Biomedical Engineering Students' Association \(BESA\)](#) is the official student association representing graduate students at the Institute of Biomedical Engineering (BME) at the University of Toronto, as well as students in the various collaborative programs affiliated with BME. Members of the BESA executive council are elected through student elections every year at the institute. BESA helps to enhance the graduate student experience here at BME, as well as connecting our students with University governance and Graduate Student Union. BESA plans and organizes social and academic events for BME students, such as pub nights, dedicated sports teams, Career Day, and BME Annual Research Conference (iARC). We encourage all BME students to consider joining the executive council to develop their leadership skills while creating life-long connections with their peers.

BME

8.21 SGS forms

Most forms used by SGS/Program Office can be found here:

<https://www.sgs.utoronto.ca/academic-progress/student-forms-letter-requests/>

APPENDIX A - Degree Milestones Summary

Milestones		Target by the end of	
No.		MASc	PhD
1	Establish supervisory committee & thesis topic	Year 1	Year 1
2	Supervisory Committee Meeting	Annually	Annually 1 st PhD supervisory committee meeting should be after 8 months from start, 3-4 months before PhD Qualifying Exam
3	Qualifying Exam ^(NB1)	N/A	Year 1 To be completed within 14 months of initial registration in the PhD program for direct admits
4	Achieve candidacy	N/A	Year 2 ^(NB2)
5	Permission to write thesis	Year 1	Year 4
6	Permission to conduct defense	Year 2	Year 5
7	Thesis defense (departmental exam)	Year 2	Year 5 (optional)
8	Final oral exam (senate exam)	N/A	Year 5
9	Electronic thesis submission	Year 2	Year 5
10	Graduation	Year 2	Year 5

NB1: The qualifying exam may also serve as the bypass exam for students from the MASc program who wish to transfer to the PhD program.

NB2: To achieve candidacy, students in doctoral program must:

- complete all requirements for the degree exclusive of thesis research and courses such as ongoing research seminars that run continuously through the program; and
- have an approved thesis topic, supervisor, and supervisory committee.

APPENDIX B – Proposal Components

The critical components of a proposal are:

1. Literature review – comprehensive, critical appraisal of the relevant literature. The literature review should provide rationale for your research. For example, the literature review may identify a shortfall of previous work, a gap in the literature or an opportunity for improvement or innovation.
2. Objectives/hypotheses – these are succinct statements of your research objectives (what you plan to achieve) and hypotheses (relating to the specific questions you want to answer), in light of your literature review.
3. Methods – this section should include everything you propose to do in sufficient detail for the committee to judge its viability. This section will include different items for each proposal, depending on the nature of your thesis. Below are some suggestions (which are not intended to apply to every thesis).
 - a. For theses involving experimental work, one would usually talk about the study design, the inclusion/exclusion criteria for research participants (if humans are involved), the instrumentation to be used, the experimental protocol/data collection and the anticipated data analysis.
 - b. For theses that are about device design, one might include technical specifications/requirements, the design methodologies, the proposed design (preliminary ideas), and the criteria, analytical methods or tests for evaluating the design.
 - c. For theses that focus on modeling a phenomenon, you might include the assumptions of your model, the modeling methodologies, relevant computational tools, the proposed model (preliminary ideas), and the criteria, analytical methods or simulations for evaluating the model.

Of course, some of these items are subject to change as your project evolves. However, it is important to at least put down the tentative plan on paper. Your methods should be justified, for example, by the scientific literature or preliminary data.

4. Timeline – this usually takes the form of a Gantt chart or a table. It should map out all the major milestones from the first committee meeting to the completion of your thesis. You should probably include internships so the committee may gain a sense of how much time you'll be able to devote to the project at different periods of the year.
5. Bibliography – literature references cited in the body of your proposal.

Note:

Your supervisor should read over your proposal before it is submitted to the committee. In fact, you should work closely with your supervisor in developing the proposal.

APPENDIX C - Recommended Agendas

Committee Meetings

1. Identify the Chairperson. The Chair may be any member of the supervisory committee (except the primary or co-supervisor). The Chair should ensure that all members adhere to the agenda and maintain order, and that the meeting is conducted fairly such that all members are given an appropriate amount of time to question the student, and that the meeting is adjourned in a timely manner.
2. The student is asked to leave the room, and the committee should discuss the following:
 - a. Whether the student has fulfilled the course requirements
 - b. Decide on question and answer sequence
 - c. Whether there are any comments or issues that should be discussed with the student
 - d. The Chair asks the supervisor(s) to disclose to the committee:
 - i. how often have they met with the student to discuss progress since the last meeting
 - ii. the status of financial support for the student
 - iii. known aspirations of the student and their strategy for degree completion
3. The student is invited back into the room
4. Student presentation (20 min)
 - a. Project scientific background (if applicable)
 - b. High-level overview of project objectives, hypotheses, methods, etc.
 - c. Detailing of results, issues, timelines, etc.
 - d. Proposal of next-steps
5. Committee questions, and discusses the project with, the student (approx. 5–10 min per member). This could go for multiple rounds
6. Student should be asked to leave the meeting room for the committee to deliberate
7. Confidential student evaluation deliberation (5–10 min)
8. Committee members should invite the student back to the meeting room to have a candid discussion about the student's accomplishments, progress, specific goals/experiments to undertake before the next meeting, plans for publications, presentations, conferences, career development, etc. (10–20 min)
9. The primary supervisor (and co-supervisor if applicable) is/are asked to leave the room for the student to speak with committee members in confidence about supervisory concerns (5–10 min) The supervisor(s) is/are invited back into the room
10. Committee members and the student should work together to derive and document discussion consensus on the committee meeting form (5 min) In the event that an evaluation category has been marked as "marginal" or "unsatisfactory":
11. The Chair and the student should work together to determine specific actions to be taken before the next meeting using the "Student Action Plan", which is to be appended to the committee report (5–10 min)

12. The Chair shall adjourn the meeting after the meeting form (and Action Plan, if applicable) is/are deemed acceptable

In the event that an evaluation category has been marked as “marginal” or “unsatisfactory”:

13. The Chair and the student should work together to determine specific actions to be taken before the next meeting using the “Student Action Plan”, which is to be appended to the committee report (5–10 min)
14. The Chair shall adjourn the meeting after the meeting form (and Action Plan, if applicable) is/are deemed acceptable

IMPORTANT: Post-meeting instructions for the student

1. Create and retain a scanned copy of the completed exam form a. The student must bring a copy of this form to the next meeting
2. Return the signed exam form to the IBBME Graduate Office (or email it as a .pdf attachment to grad.ibbme@utoronto.ca with an appropriate subject; e.g. “Last name, First name – Qualifying exam form YY/MM/DD”)

Qualifying/Bypass Exams

1. Identify the Chairperson. The Chair may be any member of the supervisory committee (except the primary or co-supervisor). The Chair should ensure that all members adhere to the agenda and maintain order, and that the exam is conducted fairly such that all members are given an appropriate amount of time to question the student, and that the exam is adjourned in a timely manner.
2. The student is asked to leave the room, and the committee should discuss the following:
 - a. Decide on question and answer sequence
 - b. Whether there are any issues that should be discussed with the student beforehand
3. The student is invited back into the room
4. Student presentation (20 min)
 - a. Thesis scientific background
 - b. High-level overview of thesis objectives, hypotheses, methods, etc.
 - c. Detailing of results, issues, timelines, etc.
 - d. Summarize and contextualize future directions
5. The Chair then invites each exam committee member, in turns of approximately equal duration, to ask questions of the student (questioning may go on for multiple rounds, until the committee is satisfied)
6. When there are no more questions, the student should be asked to leave the room for the committee to deliberate
7. Confidential deliberation and exam judgement (5–10 min)
8. The Chair records the judgement outcome on the exam form and readmits the student into the room
9. The Chair informs the student of the exam judgement and advises on next steps.

In the event of a negative judgement and/or an evaluation category marked as “marginal” or “unsatisfactory”:

10. The Chair and the student should work together to determine actions to be taken before the reconvened exam using the “Student Action Plan”, which is to be appended to the exam form (5–10 min)
11. The Chair shall adjourn the meeting after the exam form (and Action Plan, if applicable) is/are deemed acceptable

IMPORTANT: Post-meeting instructions for the student

12. Create and retain a scanned copy of the completed exam form a. The student must bring a copy of this form to the next meeting
13. Return the signed exam form to the IBBME Graduate Office (or email it as a .pdf attachment to grad.ibbme@utoronto.ca with an appropriate subject; e.g. “Last name, First name – Qualifying exam form YY/MM/DD”)

Departmental Defenses

1. Identify the Chairperson. The Chair may be any member of the supervisory committee (except the primary or co-supervisor). The Chair should ensure that all members adhere to the agenda and maintain order, and that the defense is conducted fairly such that all members are given an appropriate amount of time to question the student, and that the defense is adjourned in a timely manner.
2. The student is asked to leave the room, and the committee should discuss the following:
 - a. Whether the student has fulfilled the course requirements
 - b. Decide on question and answer sequence
 - c. Whether there are any issues that should be discussed with the student beforehand
3. The student is invited back into the room
4. Student presentation (20 min)
 - a. Thesis scientific background
 - b. High-level overview of thesis objectives, hypotheses, methods, etc.
 - c. Detailing of results, issues, timelines, etc.
 - d. Summarize and contextualize academic contribution to the field
5. The Chair then invites each exam committee member, in turns of approximately equal duration, to ask questions of the student (questioning may go on for multiple rounds, until the committee is satisfied)
6. When there are no more questions, the student should be asked to leave the room for the committee to deliberate
7. Confidential deliberation and defense judgement (5–10 min)
8. The Chair records the judgement outcome on the defense form and readmits the student into the room
9. The Chair informs the student of the defense judgement and advises on next steps.

Instructions for positive judgement:

AS (as is): the thesis must be submitted to the electronic repository within one week.

MC (minor corrections): involve typographical errors, errors in punctuation, or problems in style; they must be correctable within one month. The thesis supervisor must verify in writing (by email) to the Graduate Office that the corrections were completed.

MM (minor modifications): clarification of textual material or the qualification of research findings or conclusions. Modifications must be feasibly completed within three months. The thesis supervisor must verify in writing (by email) to the Graduate Office that the thesis modifications were completed.

Instructions for negative judgement:

10. The Chair and the student should work together to determine actions to be taken before the reconvened defense using the “Student Action Plan”, which is to be appended to the defense form (5–10 min)
11. The Chair shall adjourn the meeting after the meeting form (and Action Plan, if applicable) is/are deemed acceptable IMPO

IMPORTANT: Post-meeting instructions for the student

12. Create and retain a scanned copy of the completed exam form a. The student must bring a copy of this form to the next meeting
13. Return the signed exam form to the IBBME Graduate Office (or email it as a .pdf attachment to grad.ibbme@utoronto.ca with an appropriate subject; e.g. “Last name, First name – Qualifying exam form YY/MM/DD”)

APPENDIX D - THESIS STRUCTURE

Each degree candidate must present a thesis and pass an oral examination relating to their research.

Thesis Structure

A thesis generally contains the following components. Chapter titles and content may vary depending on the nature of the thesis.

Title Page: The title should precisely describe what the thesis is about. The most important key words that you think describe your research should appear in the title.

Abstract: This is usually one page in length, presenting the research problem, the main results, conclusion and how your thesis advances the field.

Acknowledgements: You may acknowledge funding agencies, supervisors, committee members, lab mates and anyone else you feel who was instrumental to the completion of your thesis.

Table of contents: List of chapters and sections.

A list of figures: A list of figures should be provided with specific page numbers.

A list of tables: A list of tables should be provided with specific page numbers.

A list of abbreviations: A list of all abbreviations used in the thesis and their explanations should be provided.

A list of equations: A list of equations as necessary with specific page numbers.

A list of foundations and funding sources: A list of all foundations that have contributed to the achievement of the final thesis.

Introduction: Usually this chapter includes the following:

- The area of research;
- The practical and theoretical value of the topic;
- Your research problem and why this was worthwhile studying;
- The objective of the thesis: how far you had hoped to advance knowledge in the field;
- The research method in brief; and
- A roadmap of the thesis - A paragraph about each chapter. What is the main contribution of the chapter? How do they relate to each other?

Statement of the problem and hypothesis: An explicit description of the analyzed problem and hypothesis

Related literature: A survey of the literature (theories, concepts and previous work) on the areas that are most relevant to your research question. This chapter should critically appraise the previous research area that you wanted to develop further or challenge.

Research method or design: This chapter details the research method by which you investigated the problem under study. This is essentially an updated version of the Methods outlined in your thesis proposal and should basically provide a detailed description of how you actually carried out your research.

Results: This chapter presents the data collected or the outcome of experiments or simulations.

Discussion: This chapter interprets and discusses the research findings, their relevance to the field, their relationship to published literature or their clinical implications (if any).

Conclusion: This closing chapter provides a recap of the problem, the main findings and the discussion including the comparison with the literature presented. It is also recommended that you include an enumerated list of your perceived contributions to the field. You may also suggest future research directions.

References: The references should be properly formatted according to a standard reference style (e.g., APA) and includes books, journal articles, monographs, dissertations and other publications.

Please consult the SGS Guidelines for Preparation of Theses at <http://www.sgs.utoronto.ca/currentstudents/Pages/Formatting.aspx> for the appropriate formatting of your thesis.

<http://advice.writing.utoronto.ca/using-sources/how-not-to-plagiarize/>

APPENDIX E - UNIVERSITY OF TORONTO FULLY AFFILIATED TEACHING HOSPITALS

- 1.** Holland Bloorview Kids Rehabilitation Hospital
- 2.** Centre for Addiction & Mental Health Rehabilitation
- 3.** Hospital for Sick Children
- 4.** Mount Sinai Hospital
- 5.** St. Michael's Hospital
- 6.** Sunnybrook Health Sciences Centre
- 7.** Toronto Baycrest Centre for Geriatric Care
- 8.** University Health Network (including Toronto General Hospital, Toronto Western Hospital, Toronto Rehabilitation Institute, and Princess Margaret Hospital)
- 9.** Women's College Hospital