Georgia Tech.

Wallace H. Coulter Department of Biomedical Engineering

EMORY UNIVERSITY

GRADUATE PROGRAMS HANDBOOK

2021-2022

A supplement to the General Catalogs and Student Handbooks of Georgia Tech and Emory University's Laney Graduate School

GRADUATE PROGRAM HANDBOOK

1. Overview

1.1 Purpose

This handbook outlines the policies and procedures of the Wallace H. Coulter Department of Biomedical Engineering (BME) for students in the Joint Georgia Tech and Emory Biomedical Engineering PhD Program. For students in other majors and interdisciplinary programs, please reach out to your program leadership or staff for information specific to your Associated Degree Program. BME home school requirements for the interdisciplinary programs are included in this handbook.

This handbook is intended to supplement the General Catalogs and Student Handbooks of Georgia Tech and Emory University's Laney Graduate School. It does not replace nor supersede the materials in those resources. All BME students are responsible for understanding and complying with all policies and procedures of both Georgia Tech and Emory University. In the event of a conflict in the interpretation of policies or procedures, the interpretation of the General Catalogs shall prevail. Although students are encouraged to seek advice from faculty advisors and the Academic Office, it is ultimately the student's responsibility to meet the rules and regulations of the institutions for degree completion.

See the Appendix sections for various specific resources, including a comprehensive list of electronic form links, sample physical forms (when applicable), and program timeline. This handbook intends to complement the website. Staff and Faculty contact information is provided on the BME website.

Questions should be directed primarily to the PhD Academic Program Manager in the Academic Office. The Associate Chair for Graduate Studies, Director of Student Services, and directors of the associated degree programs are also key resources.

1.2 Doctoral Programs

The department offers several graduate-level programs (also referred to as majors). The Doctor of Philosophy (PhD) program in Biomedical Engineering, is often called the BMED Program. Graduates of this program receive degrees jointly conferred by Georgia Tech and Emory. A second joint program, offers a PhD degree conferred by Georgia Tech, Emory, and Peking University is referred to as the BMEJ or PKU program.

The other programs offered are interdisciplinary programs with various departments at Georgia Tech. Graduates of these programs receive degrees conferred by Georgia Tech only.

The department offers the following doctoral degrees:

- Joint Georgia Tech and Emory Biomedical Engineering PhD Program (BMED)
- Georgia Tech/Emory/Peking University Biomedical Engineering PhD Program (PKU or BMEJ)
- Interdisciplinary Graduate Programs (Georgia Tech only)

- o Bioengineering (BIOE)
- o Bioinformatics (BINF)
- o Computational Science & Engineering (CSE)
- o Machine Learning (ML)
- o Robotics (ROBO)

All majors other than BMED and PKU are associated degree programs and are interdisciplinary. As such, they have leadership and structures separate from the BME department. Some of these programs offer specific handbooks of their own. Students in these programs are responsible for understanding the policies and procedures for both their major programs and the "home" BME department. BME does not administer interdisciplinary degree requirements, such as qualifying exams, approval of programs of study, and procedures related to dissertation committee selection and defense. BME does impose teaching practicum requirements on interdisciplinary students, ethics training, and seminar attendance.

While closely related to the BMED program, the PKU program does differ in administrative processes. Whenever needed, the PhD Academic Program Manager and/or the PKU Program Support Coordinator will make clear to students what processes are different and how they should be handled. Students that complete the BMED degree program have degrees conferred by both Georgia Tech and Emory (i.e., one diploma with both institutions listed). Students who complete the PKU degree program have degrees conferred by Georgia Tech, Emory, and Peking University (Beijing, China). Students that complete one of the interdisciplinary programs have degrees conferred by Georgia Tech only.

Additionally, the department participates in Doctor of Medicine/Doctor of Philosophy (MD/PhD) programs with students choosing one of the above majors for the PhD portion of the program. BMED majors in the MD/PhD program from Emory are treated as Emory students for academic and financial purposes.

1.3 MS Degrees

1.3.1 Interim Masters

PhD students are eligible to receive an interim MS in Biomedical Engineering as a second degree from the Joint GT/EU BME program. Students can add the interim MS degree to their program once they are approved for candidacy (see section 8.7). This degree requires no additional coursework or thesis submission. Students must declare the joint interim MS directly after entering candidacy.

Several forms are required once the intent to add the interim MS degree has been communicated to the PhD Academic Program Manager:

Georgia Tech Forms/Process (to be completed directly following admission to candidacy):

- Students must complete a Change of Major form and submit it to Georgia Tech's Registrar's Office

- Students must apply to graduate in the next available semester by submitting an [Online Application for Graduation](#) (OAG) once they have received confirmation that the MSBMED has been added to their degree program.

Emory University Forms/Process (to be completed in the semester of graduation with the interim MS):

- Students must complete the Master's Completion form, found [HERE](#). Students submit this form via the Laney Graduate School (LGS) Student Online Action Form, found [HERE](#).
- Students must complete the paper version of the Application for Degree form for an interim MS, found [HERE](#). Students should submit this form to LGS's Education Program Coordinator. Students will not be able to submit this form via Opus.

LGS will not award a Master's degree based on candidacy retroactively after a student has completed the PhD; therefore, students must apply for the Master's degree immediately upon reaching eligibility. Interim MS degrees must be awarded *during* a student's program, meaning they cannot be awarded in the same semester of the student's completion of the PhD

1.3.2 Terminal Masters

PhD students discontinuing their Doctoral program may be eligible to receive a terminal MS in Biomedical Engineering through the Joint GT/EU BME program. To be eligible to receive this degree, the student withdrawing must have completed all candidacy requirements (see section 8.7). The Joint GT/EU terminal MS requires a thesis (see LGS HANDBOOK).

To proceed with withdrawing from the program, and adding the terminal MS, students must submit the LGS Student Action Online Form found [HERE](#).

A student must complete all requirements for a terminal MS degree within five years of admission. Extensions beyond this period will be granted only in extraordinary circumstances. Programs may grant a single one-year extension beyond the five-year limit. In these cases, the student must submit a written request to the PhD Academic Program Manager who will notify the Dean of the Laney Graduate School and Georgia Tech's Office of Graduate Studies.

A student beyond the five-year limit who fails to obtain an extension from his/her program or exhausts the extension granted without completing the requirements for the degree will no longer be considered a degree candidate. No requests for additional time will be considered.

1.4 People & Roles

1.4.1 Organization Structure

The Organizational Structure, relating to the PhD Programs is described below

Associate Chair for Graduate Studies (Director of Graduate Studies (DGS) at Emory)

The Associate Chair for Graduate Studies/DGS at Emory acts as the senior administrator and academic leader for graduate studies including but not limited to academic instruction, research, and graduate services; Working closely with the Academic Office (Director of Student Services, program managers, retention advisor, program coordinators, financial and campus administrators, and faculty to lead and manage the day-to-day operations of the Graduate Offices at Georgia Tech and Emory University.

1.4.1.1 Academic Office

The Academic Office is responsible for advisement, career services, industry relations, and the day-to-day operations of the graduate program.

- **Director of Student Services** is the senior academic professional in the Academic Office primarily responsible for representing and advocating for students; mainly responsible for supervising the student services staff, managing academic operations, and ensuring compliance to Institute and program regulations, policies, and practices.
- **PhD Academic Program Manager** is the primary contact person for students on academic and research matters and practices at the program level supporting PhD students and faculty, providing advisement and administrative support on program admission requirements, degree requirements, campus policies and procedures, campus services, and funding opportunities.
- **MS Academic Program Manager** is the primary contact person for academic and research matters and practices at the program level supporting master's students and faculty, providing advisement and administrative support on program admission requirements, degree requirements, campus policies and procedures, campus services, and other programmatic student/faculty matters.
- **Retention Advisor** is the primary contact person providing advisement and guidance to students, faculty, and administrators in the preparation, implementation, and assessment of academic, research, and professional intervention plans to proactively support student development and success in the program; assisting with monitoring academic standing, program benchmarks, and student progress. The Graduate Corporate Relations Manager in the Academic Office is the primary contact for career-related matters.

- **Graduate Corporate Relations Manager** is the primary contact person providing career development and professional advising in support to students in preparing for, identifying, and pursuing corporate job opportunities, and establishing and maintaining relations with corporate representatives, other Institute units and alumni for purposes of promoting student recruiting and placement opportunities in internships, co-op positions and regular employment.

1.4.1.2 Finance Office

The Finance Office is responsible for the general accounting of the department, student payroll, and other financial matters. Information regarding the type of funding that students receive and the faculty or department accounts through which they shall be paid is maintained by this office. Students are responsible for initiating their hire requests each semester and faculty members are responsible for reviewing and approving these requests. The Academic and Finance Offices work in conjunction to ensure that student tuition waivers are handled appropriately.

1.4.1.3 Administrative Staff

The department's administrative staff provides support in areas of Human Resources, building access and space planning, supplies, mail, general office needs, and program support in some cases. Some administrative staff members support the department in general or specific programs, while others work directly with individual faculty members. Institutional administrative staff members, especially in the Georgia Tech and Emory University Graduate Offices, aid with various policies, procedures, and required forms and documents.

1.4.1.4 Technology Staff

The department's technology staff provides support with computer needs including hardware, software, network, and internet and maintains all departmental websites and databases.

1.4.2 Primary vs. Program Faculty

Faculty members with primary academic appointments in the BME department are commonly referred to as "Primary Faculty" while those who participate in one or more of the department's academic programs but who have primary appointments in other departments are members of the overall "Program Faculty." Either Primary or Program Faculty can serve as the faculty advisor for a BME PhD student.

1.4.3 Faculty Committees

Several committees exist within the department's faculty to assist with various aspects of the department's operations and strategic planning. Those related to current students in the graduate program are described below.

1.4.3.1 BME Graduate Committee

The BME graduate committee, led by the Associate Chair of Graduate Studies, is responsible for program assessment, development, and coordination of related activities relevant to the graduate program. Specific duties include the consideration of all proposed new courses, texts, curricula modifications, and program assessment data. Additionally, the committee reviews qualifying exam committee assignments, thesis committee assignments, and student grievances and petitions.

In addition to Primary Faculty, one Program Faculty member and two active graduate students are assigned to the committee. Graduate student representatives for the BME graduate committee are solicited via a self-nomination and the review process managed by the Associate Chair for Graduate Studies and Director of Student Services in collaboration with existing student committee members. Students serve a two-year term with the appointment in alternating years to ensure continuity. Factors heavily considered for appointment include the year of matriculation, location of the lab (Georgia Tech/Emory), and any other criteria deemed necessary by the committee to maintain diversity of representation.

1.4.3.2 PKU Graduate Program Committee

This committee is led by the PKU Executive Director for International Programs and has faculty members from both the Atlanta and Beijing campuses. This committee has responsibilities similar to the BME Graduate Committee specifically for students in the PKU program.

1.4.3.3 Georgia Tech & Emory Institute Committees

The Georgia Tech Institute Graduate Curriculum Committee and Emory University Graduate School Executive Council are the bodies with responsibility for all institute-wide academic policies and degree requirements at the graduate level. These committees review curriculum and student petitions such as new course proposals, changes in graduate programs or standing, grade disputes, and readmissions. Student petition forms are generally available via the Graduate offices or Registrar's Offices for the two institutions. Students filing such petitions should discuss the matter with the PhD Academic Program Manager and Associate Chair for Graduate Studies.

2 New Student Orientation

2.1 Orientations

2.1.1 Institute

Representatives from offices on both Georgia Tech and Emory University campuses involved with enrollment, acclimation to campus, and essential business (i.e., Human Resources) are present at the Institute and University orientations. Students must attend all orientations relevant to their respective degree programs.

Georgia Tech: https://grad.gatech.edu/orientation-gradexpo

Emory: New Student Information (emory.edu)

2.1.2 Department

The Academic Office sponsors a department-specific orientation for all new BME graduate students, which is held the week before the first day of classes for the Fall term. Academic, financial, administrative, and technical information particular to BME is reviewed in detail by appropriate department faculty and staff. A panel of current students is available to discuss various topics such as student-led organizations, networking, and social opportunities.

Since most students are not yet matched with faculty advisors before enrollment, the Associate Chair for Graduate Studies and other faculty members assist new students during orientation with course selection for registration and curriculum planning purposes.

Interdisciplinary programs should attend the BME orientation, and the separate orientations hosted by their programs, and students participating in those programs will have the opportunity to attend those sessions and meet with respective program faculty and staff. MD/PhD students who expect to enroll in the following year are invited so that they will be familiar with various processes before being admitted for lab rotations in the Spring.

2.1.3 International

In addition to critical immigration and related financial matters, the specific international student orientation includes key sessions regarding academic and cultural transitions. Personal health and spouse orientation sessions are also offered. Details on the GT Office of International Education (OIE) orientation and pre-arrival information for accepted international students are found online HERE!

Emory requires that all BME students, whose native language is not English, regardless of the language of instruction or TOEFL/IELTS scores, complete an ESL (English as a Second Language) assessment. This testing is normally conducted in mid-August and typically coincides with orientation week. Results from this test can lead to LGS requiring additional courses (See LGS Handbook). The specific date and time of the assessment will be advertised to students by the PhD Academic Program Manager.

2.2 New Hire Paperwork

All new students on Graduate Research Assistantships (GRA), except those students enrolled in the MD/PhD program, complete Georgia Tech Office of Human Resources (OHR) hiring packets and meet with OHR representatives during Georgia Tech's Institute-wide orientation. Stipends are then managed by the Finance Office and paid monthly via direct deposit into the students' bank accounts. Most fellowship monies are dispersed by the Georgia Tech Office of Scholarships & Financial Aid and OHR paperwork is not needed.

Students choosing to work in an Emory lab after matching will have to complete Emory hiring paperwork in early September of their first semester and will be contacted by the Emory HR representative.

2.3   Faculty Advisor – Student Matching

2.3.1   Faculty Interviews

The student-faculty advisor match is critical to success in a doctoral program. In addition to common research interests, a good match considers such factors as workstyle, personality, and lab culture. To facilitate an appropriate match between a student and faculty advisor, students must interview at least four faculty members at the start of the first term. Interviews should include in-depth discussions with faculty members and lab observations (e.g., participation in lab group meetings, meetings with current students and/or postdocs, lab tours, etc.).

By September 10th of the first semester, each student must submit a ranked list of faculty advisor preferences via the BME Student-Faculty Matching Form. Faculty members also must submit ranked lists of student preferences by September 10.

The Associate Chair for Graduate Studies and directors of interdisciplinary programs review submissions and assign matches using the following criteria, in order of importance:

- Student preference,
- Faculty preference,
- Priority for externally funded projects,
- The current distribution of students among faculty advisors.

Once matched, the student and advisor must each review and sign the BME Advisor-Graduate Student Financial Commitment Form, which details the mutual expectations and responsibilities of each party upon entering the student-advisor relationship. Paid back to September 1 of that year.

2.3.2   Optional Lab Rotations

Depending on funding availability, students in the BME program may have the opportunity to complete one or two research rotations during the summer before the first year's fall enrollment. Admitted students are welcome to contact individual faculty members of interest to determine if a rotation is possible.

Lab rotation arrangements should be coordinated directly through the faculty mentor with additional notification to the PhD Academic Program Manager. These students are still expected to take part in faculty interviews, as matches with faculty members from the rotations cannot be guaranteed. Various fellowships and training grants also offer students the opportunity to participate in lab rotations. The number and duration of the rotations vary according to the terms of the funding source. Thus, the timing of when advisor matches are formalized in these cases varies.

2.3.3 Designated Offers of Admission

Students whose offers of admission designate specific faculty members have already formally matched with their faculty advisors. While this is rare, students with designated offers do not participate in the faculty interview process, matching, or lab rotations.

3 Finances

3.1 Funding Sources

3.1.1 Overview

The department normally offers full funding to admitted students that includes a stipend and coverage of tuition. The primary source of this funding for BME graduate students typically comes from individual faculty members' support once the student-faculty advisor relationships are finalized. Students are strongly encouraged to seek external funding and those that obtain partial funding normally receive supplemental funds from their faculty advisor (primarily) or department to cover the difference. All students receive a monthly stipend intended to offset living expenses. The funding is designed to support students only and not their dependents.

3.1.2 Graduate Research Assistantships

Most new students in BME are hired under the Graduate Research Assistantship (GRA) program. GRAs are intended to be funded through sponsored research by a faculty member. GRA students participate in typical research roles. GRAs are required to maintain full-time enrollment.

3.1.3 Fellowships

Fellowships are monetary awards, usually designated for graduate students, and many are nationally competitive. There may be specific requirements and expectations, and some fellowships are limited to particular fields of study. Students applying for fellowships should carefully read the requirements before applying. Fellowship students are required to maintain full-time enrollment and must consult with the funding agency for additional restrictions and requirements.

Many public and private organizations offer graduate fellowships, including the National Science Foundation (NSF) and National Institutes for Health (NIH). Georgia Tech offers several fellowship opportunities that are specific to students of the Institute. These include the FACES (Facilitating Academic Careers in Engineering and Science), Goizueta Foundation, William Randolph Hearst, and President's Fellowships. In addition, Emory offers the Zebrowitz, Jones Awards, Centennial Scholars Fellowship, Laney, Women in Natural Sciences, and George W. Woodruff Fellowship. The PhD Academic Program Manager, the Associate Chair for Graduate Studies, and directors of the associated degree programs determine which students will be nominated for these fellowships during the admission decision-making process.

3.1.4 Other Financial Aid

Students requiring further financial assistance, including student loans, should contact the Georgia Tech Office of Scholarships & Financial Aid.

3.2 Tuition & Fees

All BMED PhD students receive tuition waivers and then tuition remission is charged to the faculty advisors. However, most students are typically still responsible for some mandatory student fees. The exact amount is dictated by the type of funding and varies annually with any changes in costs set by the University Systems of Georgia Board of Regents (USG BOR).

At Emory, changes made by a student to their registration in OPUS must be immediately reported directly to the Emory University Graduate School Registrar to avoid being personally responsible for late charges. This includes the addition or removal of an actual course being switched with the BMED 9999R placeholder course.

3.2.1 Georgia Tech

Georgia Tech is a public institution; tuition and fees for the program are set by the University System of Georgia's Board of Regents (BOR) on an annual basis. Residents of the State of Georgia and Non-Residents (i.e., out-of-state, and international students) are charged different rates. Residency or Tuition Classification is determined by BOR policies and questions regarding a student's status should be directed to the Georgia Tech Registrar's Office.

The Georgia Tech Bursar's Office is responsible for the assessment of student tuition, financial aid disbursement, and billing. After completing registration each term, students submit payment online via OSCAR, the Georgia Tech registration system. Current tuition and fees information is found online via the Bursar's Office website.

The PhD Academic Program Manager is responsible for entering GRA tuition waivers into the Georgia Tech campus system and submitting nominations to the financial aid office for non-resident tuition waiver requests. Waivers are processed only for students who submit their online hiring requests via Gradworks promptly. This form must be completed every semester a student is registered/enrolled. Otherwise, students must be prepared to pay full tuition rates.

3.2.2 Emory

Emory is a private university; all tuition and fees are determined by the Board of Trustees and are subject to change without notice. Current BMED students should refer to their OPUS account for actual tuition and fee charges each semester.

Emory's Student Financial Services Office manages student accounts (including tuition, fees, room, and board), tuition payments and payment plans, and refunds. The payment deadline for each term is the last day of the add/drop/sway period. Students are responsible for monitoring their Financial Account tile in OPUS for balances due. Information about tuition and fees can be found on the Tuition and Costs page of the Laney Graduate School website.

Tuition waivers are handled by the Laney Graduate School's financial administrators.

3.2.3 PKU Specific Procedures

PKU-Atlanta students will continue with registration and financial arrangements via Georgia Tech as usual even when traveling to Beijing for their residency. Peking University will not charge any tuition or fees. For BMED and PKU program students, any initial charges related to course registration shown in their Emory University OPUS student account should be removed by Laney Graduate School staff before the close of registration.

3.3 Stipends

Students are considered employees and must be hired by the work department each term. After submitting the initial HR paperwork during orientation, students update their funding sources via GT GradWorks or are transferred to Emory. Stipends are paid monthly (last business day of the month) via direct deposit into student bank accounts. Stipends are taxable under US laws and thus standard withholdings are applied. Most students on fellowships are not processed as employees and are therefore not subject to payroll tax. This applies to most, but not all fellowships so students should confirm their own fellowship rules.

3.4 Hiring Process

3.4.1 Georgia Tech

3.4.1.1 BMED GT Graduate Students
All Georgia Tech-lab students with BME as a home school, regardless of major/program or physical location, must complete a hiring request each semester in GT GradWorks.

3.4.1.2 Non-BMED GT Graduate Students
All students who are paid by BME but belong to another department academically must also complete a hiring request in Gradworks each term, even if the source of funding has not changed (An example is a BioE student with ME home school, working in a BME Primary professor's lab). Any applicable tuition waivers will be handled by the students' home school and not by BME. Students should complete support forms with their departments as well.

3.4.1.3 Deadlines for GradWorks Hire Request Completion
Each semester, GT-based students must initiate a GradWorks hire request by the following dates each semester/year. These deadlines are driven by the accounting processes required by the BME Finance Office and by the deadlines of the GT Financial Aid Office for receipt of some tuition waiver requests:

- Fall term – June 1st
- Spring term – November 1st
- Summer term – March 1st

Any changes to a student's status should be reported to both the Academic and Finance Offices ASAP. The GT GradWorks hiring request must be updated by the student and approved by the faculty advisor.

3.4.1.4   How-To Initiate a Hiring Request

Below is an overview of the steps students must take to initiate a hiring request in GT GradWorks:

1. Visit https://gtapps.gatech.edu/gtgradworks/
2. Log in using your GaTech credentials
3. Click on "To Work Next Semester." If you are being rehired at GT look for the "Continue this Job" button
4. Complete the required fields
5. Update fellowship or funding information as necessary
6. Submit the request for approval

For more detailed information, screenshots, and step-by-step instructions please view the GT Gradworks User Guide: Graduate Assistantship (GRA, GTA, GA) Hiring Management System.

After the hiring request is initiated in GT GradWorks, the system will send the faculty advisor a notification that the hire request is ready for approval. Once both student and faculty portions have been completed, the system will notify the Finance Office to process the appropriate hiring status and stipend payment. The Academic Office will process any applicable tuition waivers.

3.4.2   Emory

For a rehire, there is nothing a BMED-Emory student needs to complete. Should a new funding account be added/changed, the student should contact BME HR at Emory, as well as their departmental HR representative (Medicine, Pediatrics, Chemistry, etc.).

4   Roles & Responsibilities of Faculty and Students

4.1   Honor Codes

Honesty is expected of all members of the GT and EU communities. Both institutions have honor codes that are intended to remind students and faculty of the importance of honesty in their professional lives. These codes also serve to increase awareness of the institutional policies related to academic honesty and the process to be followed when these rules are broken.

It is the responsibility of the faculty to make specific expectations of appropriate conduct clear. Students may be asked to attach a statement with their signature to various assignments indicating a pledge to uphold the honor code.

4.2   Faculty Advisor – Student Relationship

The nature of the faculty advisor and graduate student relationship will vary to some degree depending on the laboratory chosen, however, there are common facets of academic, intellectual, and professional mentorship expected of the advisor, beyond the employment

responsibility of obtaining resources to pay the student and allow them to conduct needed experiments during graduate school.

Academic advising is in the form of suggesting topics of study that would be appropriate to the student's graduate thesis research. Intellectual advising consists of providing feedback on research ideas, assessing experimental progress, and guiding scientific writing. Professional mentorship will encompass identification of presentation opportunities at professional society meetings, enabling networking with colleagues in academia and industry, and guiding the student towards the next stage of their career.

In return, the student's written work (e.g., papers, abstracts, patents, thesis, etc.) as well as their contribution to laboratory operations (e.g., generating ideas, helping train new students, etc.), are considered the deliverables to be provided to the advisor during their time in graduate school and will form the basis of the next stage of the student's scientific career. Once a student is matched with an Advisor, both parties must review and sign the BME Advisor-Graduate Student Financial Commitment form, which lays out the responsibilities of a student to their Advisor, and the Advisor to their student. The Advisor commits to being responsible for the student's stipend and tuition costs for a minimum of one year (starting from the commitment date listed on the form).

Pending reasonable fulfillment of expectations and responsibilities (see Student Performance below), the Advisor also commits to funding the student's stipend and tuition for their tenure as a graduate student in the Advisor's lab. If a graduate student wishes to change advisors, they agree to give the Advisor a minimum of one month's notice, with termination coinciding with the end of an academic term to maintain proper accounting for registration and payroll processes. The student is responsible for securing a new advisor and funding before leaving the existing Advisor's lab.

4.3   Student Performance Policy

Graduate students are expected to make sufficient progress towards degree completion to remain in the program and to maintain funding. This includes the successful completion of coursework as defined by the approved Program of Study, satisfactory research progress as defined by the advisor, the passage of the various milestones in a timely fashion, fulfillment of all departmental requirements, and maintaining all minimum standards as outlined by Georgia Tech and Laney Graduate School at Emory for BME students and Georgia Tech, Laney Graduate School at Emory, and Peking University for PKU students.

4.3.1   Academic Performance

The Wallace H. Coulter Department of Biomedical Engineering has set minimum standards a BME student must meet for satisfactory academic performance. Unsatisfactory academic performance is defined as follows:

- A GPA in any semester of less than 3.0
- Receipt of a grade of F, U, IF, or IU in any course
- Receipt of two or more incompletes in a semester, or an incomplete in one 9-hour credit course *(applies for grading on both campuses within the same semester)*

A student whose academic performance is deemed unsatisfactory will be placed on probation for one semester. During the probationary semester, the student:

- Will not be allowed to take incompletes in any course without permission from the Laney Graduate School
- Must not receive a grade of (F, U, IF, or IU)
- Must reduce the number of incompletes on their record to one
- Must attain a cumulative GPA of at least 3.0

A student who fails to meet the above conditions will be placed on probation for a second semester. A student who merits a third consecutive probationary semester will be dismissed from the program unless the program provides written justification to the Laney Graduate School for the student's continuation, and the Laney Graduate School grants approval. In the event of termination, international students should notify the Office of International Education (OIE).

Any student who meets the conditions of probation described above will be reinstated to good standing. The reinstatement happens automatically, and the student will not be notified of the action. The Associate Chair for Graduate Studies should discuss with the student the terms and conditions of probation and reinstatement to good standing.

4.3.2 Student Performance Concerns

Faculty advisors must accurately report student research progress in the laboratory and performance by assigning a grade of 'S' or 'U,' for satisfactory or unsatisfactory progress, respectively. If a student earns a grade of 'U' for thesis hours, the faculty advisor must notify the Associate Chair of Graduate Studies, PhD Academic Program Manager, and student in writing, and cite specific reasons and examples for the grade assignment.

If a student earns a grade of 'U' for thesis hours, the student should schedule a meeting with the BME Retention Advisor. The faculty advisor must develop a performance improvement plan (PIP) that describes specific goals and a timeline that is deemed reasonable to all parties for the next semester. The PIP must be reviewed, agreed upon, and signed by both student and faculty advisor and the final plan must be submitted to the BME Retention Advisor, PhD Academic Program Manager, and Associate Chair for Graduate Studies.

If a student fails to meet the agreed-upon goals and/or timelines by the completion of the semester in which the PIP is in place, the faculty must submit a grade of 'U' for thesis hours. If a student has earned a grade of 'U' for thesis hours for two out of three continuous semesters, a faculty advisor may dismiss the student from their lab.

The student must actively seek out a new advisor who would support the student academically and financially immediately following dismissal from the lab. The department is under no obligation to financially support a student who is unable to secure a new advisor. Appeals for an exception to this policy must be made directly with the Associate Chair for Graduate Studies (see Student Petitions).

4.3.3 Dismissal

A student who is dismissed from the program should participate in an exit interview with the BME Academic Office to ensure that academic and financial matters are handled properly as well as with the advisor (or designee) to ensure that all access mechanisms and property of the lab are returned.

4.3.4 Leaves of Absence

Note: *Students enrolled in the BMED Joint PhD Program must adhere to the Leave of Absence policies for both Georgia Institute of Technology and Emory University – Laney Graduate School. Should the interpretation of policies need clarification, please contact your program administration in advance*.

Purpose

A Leave of Absence is intended to cover the temporary interruption of the student's academic program. Students are expected to enroll for each academic term unless a formal Leave of Absence (LOA) is requested and granted. The reason(s) for requesting an LOA must be consistent with Institute/University, and with the student's academic program guidelines.

Georgia Institute of Technology Procedures for Leave of Absence

Georgia Institute of Technology, Leave of Absence (LOA) may be granted for up to one academic year (3 semesters/terms). The LOA is granted, if following review of the student's academic record it is deemed consistent with the student's academic objectives and progress toward degree and with approval required by the Associate Chair of Graduate Studies.

A request for a Leave of Absence requires submission of an Application for Leave of Absence (DocuSign) and should be completed as outlined below.

Complete the form according to the role specified. **Note:** *Do not print and bring the DocuSign form to the Dean of Students, Office of Student Life, or Registrar's Office.* The form, once complete, will be forwarded to the appropriate department. Complete the document with all the required information:

- The Associate Chair of Graduate Studies must approve the document first. You must identify this person in the "Approver at School or College" recipient fields.
- Search the DocuSign Address Book (gray icon in recipient field) to find the correct *@gatech.edu* format email addresses for the intended recipient. Click SEND after choosing the intended recipient.
- Complete the form with the required information. Be sure to correctly state the term(s) for which leave of absence is requested and the anticipated term for your return.
- Use the file attachment field to provide supplemental documentation regarding your reason for requesting a leave of absence.
- Sign the form and select FINISH. This will automatically route the form to the person you identified as the Associate Chair for Graduate Studies.

- In your DocuSign account, you can follow the forms progress through the approval workflow or void the form at a later date.
- Please allow 7-14 business days for a review of your application by the Dean of Students and Registrar's Office.
- Contact the Registrar's Office if you need assistance completing the form.

[Application for Leave of Absence (PDF)](#)

The Leave of Absence policy does not supersede any other policy. For example, a student who needs to withdraw or petition to withdraw from a given term must follow the Institute withdrawal and/or petition procedures. All Leave of Absence applications must adhere to the policies and deadlines of the Institute – Office of the Registrar. Application deadlines for a leave of absence are as follows:

- Spring – December 1
- Summer – April 1
- Fall – July 1

Georgia Institute of Technology requires students to submit an application for return from a Leave of Absence. Please review [Guidelines for Application to Return from Leave of Absence](#). The electronic and pdf forms are available below:

- [Application to Return from Leave of Absence (DocuSign)](#)
- [Application to Return from Leave of Absence (PDF)](#)

A student who expects to be out of enrollment for more than one academic year should withdraw from the joint PhD program and apply for readmission at the time he or she expects to resume graduate studies.

Emory University – Laney Graduate School (LGS) Procedures for Leave of Absence

Emory University – Laney Graduate School (LGS), Leave of Absence (LOA) is limited to two one-year leaves of absence. A LOA can begin any time. If an LOA starts in the middle of a semester, a student will also need to completely withdraw from any course(s) enrolled during the current semester.

A student can return from an LOA only at the start of a term and can apply once preregistration opens in the term the student will resume studies or 30 days prior to the beginning of the term in which the student plans to return.

Note: The official request for an LOA does not ask you about the reason you are requesting a leave. We encourage you to discuss and document those reasons as well as your plan for returning with your advisor and/or Director of Graduate Studies (DGS) a.k.a. Associate Chair for Graduate Studies for BMED Joint PhD program.

A request for a Leave of Absence requires a written request to your advisor and the Director of Graduate Studies (DGS) and should be completed as outlined below.

- The student, advisor, and DGS should discuss all areas outlined on the [LGS LOA Signature Form](#) to include:
    1. Reasons for taking the leave of absence.

2. How the leave may affect timely progress through program and LGS requirements.
3. How the leave will affect stipend payments and health insurance coverage.
4. The date of the final stipend payment before the leave becomes effective.
5. A summary of any communication with ISSS, if applicable.

Note: If electronic signatures cannot be secured, the student must scan the completed and signed forms.

- Summarize the discussion in an email and confirm the student's understanding with advisor and DGS.
- If all parties agree of the summary, submit the [LGS student action online form](#) with the email summarizing points 2-5 (above).
- Veterans who wish to take a LOA must contact the Office of the Registrar at [registr@emory.edu](#).
- If the student is starting a leave in the middle of a semester, the student must also complete the [LGS Withdrawal Signature Form](#), and obtain any required signature(s).

At the completion of submission, the student and program administrator/manager will receive a confirmation email. All LOA requests will be reviewed by the Assistant Dean of Student Affairs. Final approval is rendered by the Dean. Decision notifications will be processed and sent via email notification to the student, program administrator/manager, LGS Funding, and if applicable to International Student and Scholar Services (ISSS) and the Registrar.

Eligibility Guidelines for Leave of Absence

To be eligible for a leave of absence, a student must be in good academic standing and have no Incomplete (I) grades. A leave may be granted when a student plans to be away from the Program for one of the following reasons:

1. Serious physical/mental illness or short-term disabilities.
2. Concentration on work not directly related to the student's academic program.
3. Competing family obligations/responsibilities inhibiting student's timely and meaningful academic progress to degree completion (i.e., childbirth, childcare, short-term parental or spousal care, immediate family deaths).
4. Temporary interruption of the student's academic program for other appropriate reasons.

If a Leave of Absence request was approved and the student subsequently becomes ineligible for LOA status (i.e., Cumulative GPA falls below 3.0 prior to leave, academic dismissal from program due to unsatisfactory progress), approval for LOA will be rescinded.

Program Restrictions to LOA

Students who are ineligible to return to Georgia Tech/Emory University LGS may not seek a Leave of Absence to address that status. The Leave of Absence policy does **NOT** apply under the following circumstances:

- If a student has not completed at least one semester of graduate study within the BMED Joint PhD program at Georgia Tech and Emory University.

- If a student has not demonstrated satisfactory academic progress within the BMED Joint PhD program at Georgia Tech and Emory University.
- If a student will be absent from the campus(es) and outside Georgia while continuing to pursue graduate research or scholarly activity.
- If a student requests a Leave of Absence retroactively.

Relevant Policies/Information for Leave of Absence

Important information for any student taking a leave of absence to consider, understand, and apply to the processes/practices before, during and after the leave of absence period:

- A student approved for an official LOA will have no access to any campus facilities (i.e., research labs, systems, etc.) or student/academic services during the leave of absence period.
- A student approved for an official LOA is advised to plan for health care coverage during the leave of absence period, as a student on leave will not be covered by the graduate student health insurance plans offered via Georgia Institute of Technology or Emory University.

Note: *Please refer to health coverage plans for exceptions or continuance coverage options during leave of absence.*

- A student approved for an official LOA cannot take qualifying examinations for advancement to candidacy or final examinations for the degree, nor pursue their graduate studies on either campus in any other manner or receive academic credit for work done at another institution during the leave period.
- While on a LOA, a student is not eligible for Institute/University fellowships, research grants, or financial aid support. Students should work directly with student advisors, program Finance Offices, and/or program administrators to ensure compliance of fellowship/grant regulations and policies.

Note: *If applicable, any student with loan obligations must contact the agency to verify loan status before applying for a leave of absence.*

- A student on an approved LOA may not be employed by Georgia Institute of Technology or Emory University in any capacity.
- Leave of Absence status may impact eligibility for any students living in campus housing on either campus. To understand the impact of LOA status and campus housing/living, students should directly contact campus housing offices for more information.
- Prior to applying for a LOA, international students should consult with ISSS at Georgia Institute of Technology and/or the ISSS at Emory University for protocols and requirements required for a LOA and to clearly understand the impact a LOA has on visa status.
- Immediately following a LOA, students must register/enroll as a full-time student.

4.3.5 Readmission

Note: *Students enrolled in the BMED Joint PhD Program must adhere to the Readmission policies for both Georgia Institute of Technology and Emory University – Laney Graduate School. Should the interpretation of policies need clarification, please contact your program administration in advance*.

Readmission – Georgia Tech

Any student who has been out of enrollment for two or more consecutive terms (including summer semester) must apply for readmission. Readmission applications with all pertinent supporting information must be submitted to the Office of the Registrar with prior consultation/advisement with your academic program administrators and by the deadlines as outline below:

Readmission Term	Application Due By Date
Fall	July 1
Spring	December 1
Summer	April 1

 Applications received after these deadlines will not be accepted – no exceptions will be permitted. Readmission is not guaranteed. Schools/Colleges must recommend readmission for any student wishing to return to their majors under their jurisdiction.

A graduate student who is dismissed by the department, whether by Georgia Tech or Emory University, for academic or disciplinary reasons will not be readmitted. A student who takes an approved leave of absence from the program and is in good standing may apply for readmission beginning with the Georgia Tech Registrar's Office.

Any student, except a part-time graduate student, who withdraws during an academic term and wishes to return the following academic term must complete a Petition to the Faculty for consideration. This petition must be submitted to the Office of the Registrar and your major school/academic program before the deadline for the academic term for which readmission is requested.

Readmission – Emory Laney Graduate School (LGS)

Students who have been out of enrollment for one or more terms must apply for readmission. This is required both for students who were on approved leaves of absence and for students who allowed their enrollment to lapse without obtaining an approved leave.

The first step a student must take to apply for readmission is to contact the academic program where student was enrolled in the last term of residence. Readmission is approved at the discretion of the program and/or division, which may also prescribe additional course/program guidelines. Consideration for readmission includes a student's academic standing at the end of the last term registered and grades of incomplete that were converted to Fs during the student's absence.

Students who fail to maintain continuous registration become inactive and are ineligible for financial aid and health insurance and will need to apply for readmission at least 30 days before the term in which they wish to be readmitted/re-enrolled. Students who have not enrolled in five years are not eligible for readmission but must apply as new students. Students who have exceeded the nine-year limit on time to degree cannot be readmitted.

Students who discontinued graduate study with a terminal master's degree will not be readmitted.

4.3.6   Rights & Responsibilities

All parties involved have both the rights and responsibilities for the following at any and all points in the process: confidentiality, clear communication, constructive and professional interactions, appropriate and fair expectations, clarification of expectations, timeliness of actions and communication, and consultation with the BME Academic Office and/or departmental administration whenever needed. The utmost sensitivity to professional and personal concerns will be upheld at all times.

4.4   Record Keeping

Accurate, thorough, and timely documentation of all academic, financial, and other business matters is vital to all constituents of the program – students, faculty, staff, department, and institutions. Details for the most critical matters are described throughout this handbook.

4.4.1   Student Files

The official student records subject to FERPA (Family and Educational Rights Protection Act) are maintained by the Offices of the Registrar at Georgia Tech and Emory. Progression through the program will be maintained through the BMED PhD Program Database, accessible and updatable by students, advising faculty, and academic office staff. Forms including, but not limited to, copies of milestone forms are contained within this database. Other departmental files maintained by the BME Academic Office are not subject to FERPA and thus are not required to be accessible for student review.

Students may request certain information from their files (including, but not limited to, copies of milestone forms), but will not be given direct access due to the sensitive and confidential information contained within them (e.g., admission recommendations they previously waived their rights to view and details from qualifying exams that may not be appropriate for distribution). The Associate Chair for Graduate Studies and staff in the Academic Office are responsible for reviewing student requests for information and determining what access shall be given.

4.5   Student Petitions and Grievances

Students can request special permission to modify any requirements stated in this handbook by formal request through the Graduate Committee by contacting the PhD Academic Program Manager.

Students with a grievance related to some aspect of their program in the Wallace H. Coulter Department of Biomedical Engineering (GT/Emory BME) should report it to the Associate Chair

of Graduate Studies. The student should describe the grievance and relevant details in a letter addressed to the Associate Chair for Graduate Studies, who will try, if possible, to resolve the grievance in conversation with the student and relevant parties. If this is not successful, the Associate Chair will refer the grievance to the Graduate Committee, who will review the grievance and propose an appropriate response.

If it is impossible to resolve the grievance within this committee or within the frameworks of the GT/Emory BME administrative structure, the Associate Chair will forward the grievance to the Asst. Vice Provost for Advocacy & Conflict Resolution at Georgia Tech and/or the Office of the Senior Associate Dean of the Laney Graduate School depending on the parties and circumstances involved. At Emory from this point forward, the grievance will be handled according to the Grievance Procedure outlined in the Laney Graduate School Handbook.

If the issue is with the Associate Chair, the student should go directly to the Asst. Vice Provost for Advocacy & Conflict Resolution at Georgia Tech or the Senior Associate Dean of the Laney Graduate School at Emory.

5 Business Policies

5.1 Overview

This section outlines the main business policies and procedures related to graduate students. Students are responsible for understanding this information and fulfilling all requirements. Contact information for particular staff members can be found on the BME website.

5.2 Building Access

The Administrative Staff on each campus will provide the appropriate building access to eligible students. A form with proper authorization is required. For access to labs, additional safety certification is required. At Georgia Tech, the student Buzz Card will be programmed for UA Whitaker building and lab access. Any change in labs requires the reprogramming of the card. At Emory, keys and access codes are assigned to students whose labs are at Emory by the mentor and appropriate departmental contact.

5.3 Computer Access & Usage

All new students are assigned network and e-mail accounts by Georgia Tech (accessible in mid-July before their first semester in the program). All BMED and PKU program students are also assigned accounts by Emory. Students are required to check all official e-mail accounts regularly. Students should contact the appropriate institutions' Information Technology departments if they encounter technological difficulties (Emory IT/Georgia Tech IT). Designated computer labs and wireless access are available on both campuses. For physical access, the Administrative Staff should be contacted. For technical access and support, the Technology Staff should be contacted.

5.4 Copies & Fax

Photocopiers are available for student and faculty use on both campuses. Use of the copiers is restricted to official BME business only. All copiers require an access code available from either

the Faculty Advisor (for lab copiers) or Administrative Staff (for general building copiers). Copying entire books or theses is prohibited. At Georgia Tech, copiers are located in the UAW in the 2nd Floor Mailroom and the 3rd Floor lounge area. At Emory, a copier is available in the BME office on the second floor of HSRB.

Fax machines are available for official BME use at GT in the 2nd Floor Mailroom of UAW or the BME office on the second floor of HSRB.

5.5   Health Insurance

Students must show proof of health insurance to enroll in any doctoral program. Students without independent health insurance (e.g., parent/family policy) must obtain student health insurance provided by their institution or a private insurer. BMED students have the option to enroll in plans offered at either Georgia Tech or Emory University. Interdisciplinary students without independent insurance can only obtain student health insurance through Georgia Tech.

BMED students must complete the insurance waiver process **every semester** at the institute where they opt-out of insurance coverage to avoid being automatically enrolled in a plan and charged. If a student has independent or private insurance, they must complete the waiver process at **both** schools. Additionally, international students at Georgia Tech cannot waive the health insurance requirement with PHG Global or a non-ACA compliant "offshore" health insurance plan.

Students are encouraged to review the insurance plans offered by *both* institutions in-depth. The Stamps Health Services website supplies details about the available insurance plans at Georgia Tech, step-by-step enroll/waive instructions, as well as useful links and resources to compare plans. Further questions and concerns about specific insurance plan details can be directed to the Stamps Health Services Insurance Coordinator.

The Student Health Services website supplies details about Emory University Student Health Insurance Plan (EUSHIP). Each section of their homepage contains comprehensive information about Emory's insurance, including coverage, pricing, enrollment, and the waiver process. If you cannot find the answer to your question related to insurance, please contact their offices directly (contact information found on the website).

NOTE: MD/PhD students must enroll in EUSHIP unless otherwise covered by an independent policy. Additionally, some fellowships paid through Emory provide free enrollment to EUSHIP. Students should review the terms of their fellowship appointments each semester to determine eligibility.

5.6   Immunization Records

Students are required to show proof of immunization at both Georgia Tech and Emory University. Stamps Health Services is responsible for collecting this information at Georgia Tech and will place a registration hold on all students until the requirement is fulfilled. Specific forms are required and are available on the Stamps Health Services website. Similarly, Emory's Student Health Services collects vaccination records at Emory University; the required forms can be found on the Student Health Services website.

5.7 International Students

Due to US immigration policies, students must be aware of and comply with policies regarding maintaining proper Visa status, obtaining Social Security Numbers, and rules for international travel. The Georgia Tech Office of Graduate Admissions Office and PhD Academic Program Manager work together to produce and send initial immigration documents (such as the I-20) to new international students. Students may occasionally need departmental documentation of current academic status for travel purposes; this can be obtained through the PhD Academic Program Manager.

5.8 Mailboxes

BME program students are assigned departmental mailboxes in UAW. Mailboxes are located on the first floor in the corridor near the Engineering Science & Technology building. The mailboxes are for official business use only and are not to be used for personal mail. Personal mail should be sent to students' campus or home addresses.

Students are responsible for checking their incoming mail regularly. Large packages should be sent to the student's faculty advisor. Official outgoing mail requires a departmental postal slip available from and approved by, an Administrative Staff person. Internal mail to/from either Georgia Tech or Emory should be sent via an interoffice mailer (available in the 2nd-floor mailroom of UAW or from the Emory Administrative Assistant) and is delivered approximately once per week.

5.9 Name Changes

Students who legally change their names after enrollment must notify all appropriate departments at both schools of the change. For the Department, students should contact the PhD Academic Program Manager. For Georgia Tech and Emory, students should contact the respective Registrar and Human Resources Offices.

5.10 Parking

Joint Biomedical Engineering PhD students have parking privileges on both campuses. Students can purchase a permit at Georgia Tech or purchase a permit at Emory. To meet the requirements for the reciprocal parking arrangement, students must purchase a qualifying permit (e.g., annual) at one institution to qualify for the courtesy permit at the sister institution. The Administrative Staff at Georgia Tech provides a list of students to both transportation offices according to the inter-campus agreement each semester. BioE students with BME as their home school who are assigned to advisors at Emory may also have these privileges.

5.11 Phones

Telephones are available on each campus for official business only.

5.12 Purchasing

Purchases of equipment, materials, and supplies should be coordinated through each research group's designated supply person. All purchasing requests require a faculty member's approval and the appropriate account number or procurement card number. Purchase of $1500 or more, and/or restricted items such as radioactive materials, hazardous chemicals, and animals must be

made using a purchase requisition. For further details, contact the research group's designated supply person.

5.13 Recycling
Both Georgia Tech and Emory have campus-wide recycling initiatives. All faculty, staff, and students are strongly encouraged to recycle materials whenever possible. Receptacles are available on both campuses. See http://www.recycle.gatech.edu/ and http://www.fm.emory.edu/recycling/index.html for details.

5.14 Room Reservations
Classrooms and conference rooms are available on both campuses for proposals, defenses, meetings, and student organization events. Links to room reservations for UAW, TEP, and HSRB, as well as videoconference requests, are available on the BME homepage.

5.15 Safety Guidelines
All BME personnel with laboratory access at Georgia Tech are required by the University System of Georgia's Board of Regents to complete online "Right-To-Know" safety training on an annual basis. New students, faculty, and staff must complete the training and submit a certificate along with the required Building Access Authorization Form to the Administrative Staff before lab access is granted.

Additionally, the department requires annual Basic Lab Safety training that covers chemical safety, emergency procedures, and basic waste handling procedures. In most of these classes, blood-borne pathogens are also covered. Typically, these classes are offered in August before the start of the fall term and are arranged by the Georgia Tech Office of Organizational Development.

5.16 Travel Between Campuses
The Georgia Tech/Emory Shuttle transports students, faculty, and staff between the Georgia Tech and Emory campuses. A complete schedule and description of stop locations for the shuttle can be found online on the Parking & Transportation website.

5.17 Student Identification Cards
Joint BMED PhD program students should obtain student identification cards from both institutions. The BuzzCard (Georgia Tech) and EmoryCard (Emory) websites provide official identification, building access, and the ability to pay for services such as copies, dining, and entertainment.

5.18 Travel
Students occasionally travel, most often to present research at conferences. For official business travel, such as attendance at conferences, reimbursement of expenses may be available. There are several different sources of funding, including faculty advisor support, as well as departmental institutional resources such as the BME Student Travel Funds and the Georgia Tech Graduate Conference Fund. Details on applying for travel award funds can be found on the

the BME Financial Resources website under the Student Travel section. For Laney Graduate School student travel guidelines, reference the Graduate Student Travel page.

A student's faculty advisor is the primary resource for information regarding student travel. The faculty advisor should guide the student relating to budgeting, trip planning, and official policies and procedures. For any reimbursable activities, travel authorization paperwork must be submitted before the travel takes place. Upon return, official travel reimbursement forms must be submitted with original receipts.

5.19 Vacation

Graduate students are considered temporary employees of Georgia Tech or Emory University and are not eligible for benefits (e.g., accrued time off each month, employee insurance, FMLA). However, students may take advantage of two weeks (10 business days) of vacation in addition to the ten days of official institutional administrative holidays during every 12 months of residency. Semester breaks and periods between terms are not automatic vacation days.

Vacation and any special (unpaid) leave must be approved well in advance by the supervising faculty advisor.

6 Curriculum & Training

6.1 BMED PhD Program Overview

The BMED program curriculum is designed to offer flexibility. The specific goals of the curriculum components are (1) to leverage our expertise in teaching methodologies, such as problem-based learning, that are a model to other departments internationally, (2) to facilitate adequate depth of knowledge acquisition in areas critical to each student's thesis research, and (3) to provide advanced graduate courses in the areas of research in which the department faculty excel.

The curriculum will facilitate individual flexibility and depth of study through coursework selected by the student and thesis advisor. The table below provides an overview of the BME curriculum by category and hours required. The sections following outline specific course training and requirements in more detail.

Description	Requirement
Integrative Engineering-Biomedical Science BME Problem-Based Course (3 options)	*One, 3-hour course*
Bioscience, Data Science, Engineering, and Elective Courses	5-7 courses (21 hours total) 1 Bioscience course 1 Data Science course 1 Engineering course 2-4 Research-Specific electives
Advanced Graduate Seminar Course (6 options)	*One, 3-hour topical discussion-format course*
Ethics, Teaching, and Professional Development Training Courses	*5 courses (includes workshops and training)* JPE 600 (Emory – Ethics Training)

	JPE 610 (Emory – Ethics Training) TATT 600 (Emory – TA Training) BMED 7004 (Ethics/RCR/TA - GA Tech) BMED 7005 (Ethics/TA - GA Tech)
Seminar Attendance	*7 seminars, 4 semesters* BMED 7001

6.2   Core Required Training

6.2.1   Integrative Core Series (BMED 7011/7012/7013)

Integrative core courses introduce students to an open-ended, problem-solving environment central to their success in a PhD program. The courses may be co-taught and focus on a particular topic. Students will, in the context of that topic area, address fundamental technical issues, critically read and evaluate literature, pose well-developed research questions that can be addressed by either experimental or modeling approaches (or both), and understand the importance and limitations of these approaches. In the course, one hour will be dedicated to ethical issues in the topic area related to science and engineering in society.

As a group, the three integrative core courses offered span research areas of our program and the organizational hierarchy from molecular to organismic. Each student will select the integrative core course that fits their interests, and they should complete the course in the first year of their program, before taking the qualifying exam.

6.2.2   Advanced Graduate Seminar (Course numbers vary)

The Advanced Graduate Seminar course is designed to teach students how to develop breadth and depth of knowledge in a specific topic area. All Advanced Seminars achieve the following objectives: (1) Understanding of fundamental principles, approaches, and tools; (2) Identification of leading-edge questions; (3) Identification of gaps in knowledge; and (4) Identification of technical challenges faced.

6.3   Bioscience, Data Science, Engineering, & Electives

Fundamental courses focus on foundational knowledge in bioscience, data science, and engineering. These courses may be offered by the Wallace H. Coulter Department of Biomedical Engineering or by other units at Georgia Tech and Emory. Students should complete at least one approved course in each category; a comprehensive list of approved courses can be found on the BME Graduate Program Curriculum page.

The overall balance of engineering and bioscience courses is determined by the student and their advisor and should factor in the student's prior knowledge and research. Of the remaining credits, courses may come from any category including fundamentals or electives. Courses must be documented on the Program of Study form and must be approved by the PhD Academic Program Manager.

6.4 Minor Field of Study

The minor is at least nine semester hours of work in related courses, selected by the student in consultation with their advisor and approved by the PhD Academic Program Manager [following Georgia Tech policies](). Although the student need not complete the minor as a prerequisite to become a candidate, the minor must be completed and approved to be cleared for graduation.

6.5 Ethics

Emory's Laney Graduate School requires that all BMED students complete [JPE 600 and JPE 610.]()

JPE 600 is a one-day session at Emory University offered before the start of each fall term. The course provides 6 hours of content covering a broad historical and philosophical overview of ethics, identifies key ethical issues students are likely to face throughout their careers, presents the role of ethics in research and professional practice, and through case studies, helps students develop a process for evaluating ethical issues. Students must attend the entire course in their first year to receive credit.

JPE 610 is a series of educational sessions. Students must complete a minimum of 4 workshops. These workshops will be sponsored by the LGS, the Emory Center for Ethics, and will include any other relevant occasional lectures or workshops. Students will register for these sessions individually, and participation will be recorded on the student's transcript. These workshops can be completed after candidacy**.**

As part of their degree requirements, Georgia Tech doctoral students must complete: (1) an [online Responsible Conduct of Research (RCR) course]() and (2) in-person RCR training. The online portion of the requirement must be completed within 90 days of when a student begins the first semester of their doctoral program.

In-person RCR training takes place during BMED 7004.

BMED 7004 Teaching & Research Practicum I includes eight hours of in-person training. Topics include authorship and publication, collaborative research, conflict of interest, data management, peer review, policies regarding the use of human subjects and vertebrate animals in research, research misconduct, and the responsibilities of mentors and mentees. Students in interdisciplinary programs may submit a transcript record of a Georgia Tech-approved RCR training course to the Associate Chair for Graduate Studies to waive the requirement of completing the ethics training module of BMED 7004.

BME students are also required to take Integrative Core and Advanced Seminar courses, which include 1.5 hours each of in-person RCR training in appropriate topic areas for a total of three additional hours of RCR training.

6.6   Professional Development

6.6.1   TATTO (Emory) or TA Orientation (Georgia Tech)

All joint GT and Emory BMED PhD students must complete TATT 600, a 2-day workshop offered before the start of each Fall term. All BME students with only a Georgia Tech affiliation (i.e., interdisciplinary program students) must attend Georgia Tech's TA Orientation.

6.6.2   Program-Specific Courses (BMED 7001, BMED 7004, BMED 7005)

BMED students are required to complete four terms of the BMED 7001 seminar course. When enrolled, students attend a minimum of five research seminars and two professional/career development seminars per term (7 seminars total). Georgia Tech and Emory University host seminars that fulfill the attendance requirement. A Seminar Participation Form documenting the seminar titles, dates, and host institutions for seminars attended must be completed, signed, and submitted by the student, to the course management site for the student to receive a Satisfactory (S) grade in BMED 7001. A student who fails to register for the course will not be able to apply attendance from one term to a future term's registration. A student who registers but fails to submit the completed and approved Participation Form will receive an Unsatisfactory (U) grade for the course.

All BME students must register for BMED 7004 and BMED 7005 during their first and second term as TA (during their second year), respectively. These classes provide students with instructional and application-oriented teaching training, as well as information relevant to academic life. In addition, BMED 7005 Teaching & Research Practicum II, contains a professional development training module, which provides training in the areas of mentorship, project management, career exploration, diversity, equity, and inclusion, and communication.

6.6.3   Teaching Assistantship

Teaching is considered an integral part of the educational experience and is a requirement for all BME students (BMED and Interdisciplinary BME home school students). Doctoral students serve as Teaching Assistants (TA) for two semesters. The Director of Student Services finalizes TA assignments during the semester before the start of the TA position. Students enroll in training courses concurrently with their TA position, typically the Fall and Spring semesters of the second year in the program.

6.7   Thesis Hours

All students must enroll in a Doctoral Thesis (BMED 9000 - GT) section with their faculty advisor listed as the instructor of record each semester. Those students without a faculty advisor (i.e., new students) should enroll in the section with the Associate Chair for Graduate Studies listed as the instructor of record.

Thesis hours are variable. Students should adjust the thesis hours to account for courses taken during a term. A student should first enroll in courses for credit and then enroll in

thesis hours, adjusting the variable hours to the maximum allowable number of hours in a term (i.e., 21 hours per fall/spring; 16 hours per summer).

6.8   PKU Specific Training

Students enrolled in the PKU (BMEJ) program are subject to language and ethics training requirements that differ from those outlined for BMED students. All policies are approved by the joint Atlanta-Beijing PKU Graduate Committee. Questions may be directed to the Executive Director for International Programs.

6.8.1   Language Requirement

BMEJ students who matriculate first on the Beijing campus must demonstrate English proficiency via the TOEFL/IELTS requirement during the admissions process. BMEJ students who matriculate first of the Atlanta campus must complete the Chinese language requirement by completing the Georgia Tech CHIN 1001 course by the end of their second year, with a minimum grade of B. Atlanta-based students are encouraged, but not required, to take further CHIN courses to improve their Chinese proficiency before their residency in Beijing.

Atlanta-based students can be exempt from the language course requirement by contacting the Georgia Tech School of Modern Languages for a proficiency assessment in the first term of enrollment. Results of the assessment should be sent via e-mail to the PKU Program Support Coordinator and PhD Academic Program Manager. All language course(s) (exempt or for-credit) must be noted on the Program of Study.

6.8.2   Ethics Series

Beijing-based BMEJ students must complete the Jones Program of Ethics (JPE 600 & JPE 610), the ethics training component of BMED 7004, and ethics training components within the BMED Integrative Core and Advanced Seminar courses upon enrollment at the Atlanta campus.

6.9   Associated Degree Programs

6.9.1   Interdisciplinary Programs

As the associated degree programs (BIOE, BINF, CSE, ML, ROBO) are interdisciplinary and have their structure, the details on curricula and program milestones can be obtained from the individual program handbooks and leadership.

However, there are requirements for BME Home school students in the Interdisciplinary Programs.

6.9.2   Program-Specific Courses (BMED 7001, BMED 7004, BMED 7005)

Interdisciplinary students with BME home school are required to complete four terms of the BMED 7001 seminar course. When enrolled, students attend a minimum of five research seminars and two professional/career development seminars per term (7 seminars total). Georgia Tech and Emory University host seminars that fulfill the attendance requirement. A Seminar Participation Form

documenting the seminar titles, dates, and host institutions for seminars attended must be completed, signed, and submitted by the student, to the course management site for the student to receive a Satisfactory (S) grade in BMED 7001. A student who fails to register for the course will not be able to apply attendance from one term to a future term's registration. A student who registers but fails to submit the completed and approved Participation Form will receive an Unsatisfactory (U) grade for the course.

Interdisciplinary BME home school students must register for BMED 7004 and BMED 7005 with their first and second terms as TA (during their second year), respectively. These classes provide students with instructional and application-oriented teaching training, as well as information relevant to academic life. In addition, BMED 7005 Teaching & Research Practicum II, contains a professional development training module, which provides training in the areas of mentorship, project management, career exploration, diversity, equity, and inclusion, and communication.

6.9.3   Teaching Assistantship

Teaching is considered an integral part of the educational experience and is a requirement for all BME students (BMED and Interdisciplinary BME home school students). Doctoral students serve as Teaching Assistants (TA) for two semesters. The Director of Student Services finalizes TA assignments during the semester before the start of the TA position. Students enroll in training courses concurrently with their TA position, typically the Fall and Spring semesters of the second year in the program.

6.9.4   MD/Ph Program

MD/PhD students enrolled in the BME graduate program may apply up to nine hours of medical school courses to the 21-hour fundamentals requirement. All nine hours count as bioscience courses and/or electives. MD/PhD students must fulfill all additional BME course and training requirements. MD/PhD students enrolled in an interdisciplinary program should consult with the leadership of those programs for details on curriculum and training.

6.10 Transfer Credit Policy

Students are eligible to transfer up to nine (9) credits into the Joint Biomedical Engineering PhD Program. Please note: Only six (6) credits are eligible to transfer towards a masters. Emory courses can count towards the GT-only Masters.

Potential transfer credits must be reviewed by the Graduate Committee before applied to a student's Program of Study. The PhD Academic Program Manager will notify students once a decision has been made regarding the credits.

Students will need the following for their petition:

- A written justification for each course to receive credit, including which course category it should be applied (BioSci, Eng, DataSci)
- For any Non-GT courses, students should lookup potential GT course-equivalencies with their petition (Example: Fluid Mechanics course from their previous institution transfer credit should list the ME Fluid Mechanics course number at GT).
- A revised Program of Study reflecting the transfer credits endorsed by your faculty advisor
- All applicable transcripts reporting a letter grade for each course (Pass/Fail courses are not accepted)
- All applicable syllabi for each course to receive credit

Students can submit all materials by completing the [BMED Transfer Credit Form](#) . The Graduate Committee will review transfer credits. The PhD Academic Program Manager will notify the student once a decision is available. Students can submit all materials by completing the [BMED Transfer Credit Form](#).

Approved transfer credit for PhD students will NOT appear online in DegreeWorks (GT) or OPUS (Emory). The approvals are made internally at the department level and will not reflected on student transcripts The Academic Office will also retain copies for your student file. All paperwork for the petition (initial request, notification of results, revised Program of Study) should be retained by the student for their records.

7 Registration

7.1 BMED PhD Program

7.1.1 Tuition & Fees

Students in the BME program have their tuition and fees assessed by Georgia Tech or Emory depending on where the advisor's lab is located. Each student is personally responsible for the balance shown in his/her OSCAR or OPUS account, including the resolution of any charges that may be handled through another mechanism depending on the terms of a student's funding status (e.g., the application of a GRA tuition waiver – see Chapter 4 on Finances for more information).

7.1.2 BMED Courses

Students in the BMED program have full student status at both institutions and therefore may register for courses at each school. Registration for all BMED courses is completed via the Georgia Tech OSCAR system. To maintain active student status at Emory, students will be registered for the appropriate placeholder course described in Section 7.1.5.

For the PKU program, students have full status at all three institutions and may register for courses via the corresponding institution. Students enrolled in the PKU

program must be registered for placeholders at secondary institutions when not taking for-credit courses.

7.1.3 Non-BMED Courses

Students register for courses in other Georgia Tech and Emory departments as appropriate by using OSCAR and OPUS, respectively.

7.1.4 Course Load Expectations

All students are expected to maintain full-time status at Georgia Tech each fall (21 hours), spring (21 hours), and summer (16 hours) term, unless special circumstances arise and are approved. Students must adjust the hours for the Thesis course to ensure maximum hours to fulfill the terms of their Graduate Research Assistantships (GRA) and/or Fellowships and ensure proper payments. See more information in Section 3 Finances.

During the semester in which a student plans to graduate, there are modifications to course loads and payment (see Section 9.2). Students should consult with both the faculty advisor and PhD Academic Program Manager before registration and payment deadlines.

7.1.5 Secondary Institution Placeholders

7.1.5.1 Emory

Atlanta students who are based in Emory labs should register for BMED 599R (before PhD candidacy) or BMED 799R (after PhD candidacy) each term for a minimum of 9 credit hours. To keep student status active at Emory, students from Georgia Tech and PKU labs should register for the BMED 9999R placeholder course every semester when not registered for credit courses at Emory.

7.1.5.2 Georgia Tech

Beijing-based PKU students must register for the BMEJ 9999 placeholder course every semester when not taking for-credit courses at Georgia Tech. All other BME students must register for BMED 9000 (see section 6.7).

7.1.5.3 MD/PhD

MD/PhD students should register directly in both schools' systems (Emory-OPUS and Georgia Tech-OSCAR) each semester.

OSCAR: New MD/PhD students should register for the Georgia Tech placeholder course BMEM 6001 as the variable-hours course to supplement for-credit courses taken to reach the minimum total hours required each term until they are officially matched with a thesis advisor. Once matched with a thesis advisor, MD/PhD students should register for their for-credit courses and their advisor's section of BMED 9000.

Following their first semester, MD/PhD students should register for their for-credit courses and their advisor's section of BMED 9000. They will be registered for BMED 9000 at Emory.

OPUS: MD/PhD BME will always enroll in BMED 9000; the number of hours will vary by semester to reach full-time enrollment status. Students will be enrolled in BMED 9000 by the MD/PhD Program for their first semester and enroll themselves thereafter. Performance in Georgia Tech courses BMEM 6001 and BMED 9000 will be mirrored by the Emory BMED 9000 course as a satisfactory/unsatisfactory grade. The MD/PhD program may require other courses on the Emory.

7.1.6   Registration Calendars & Deadlines

Important dates including the timelines and deadlines for registration each term can be found on the Registrar websites for both schools. Students are responsible for registering via the appropriate system or person promptly and before the final deadline.

7.1.7   Improper Registration or Failure to Register

The Registrar's Office is strict concerning registration deadlines and fee payment. Late fees and issues with applicable tuition waivers (i.e., being charged full tuition and fees) associated with improper registration are the responsibility of the student. Failure to register may require a petition to the Institute for reinstatement or result in lost status and payment for the term. Failure to register properly in the final term of enrollment may prevent a student from graduating.

7.2   Associated Degree Programs

7.2.1   Interdisciplinary Students

Students in interdisciplinary degree programs (BIOE, BINF, CSE, ML, ROBO) are considered Georgia Tech students only and must use OSCAR for registration. Interdisciplinary students interested in non-BMED courses at Emory must apply through the cross-registration program, Atlanta Regional Council for Higher Education (ARCHE). Only courses that are not taught at Georgia Tech are eligible and details on the ARCHE program can be found on the Georgia Tech Registrar's Office website.

7.2.2   MD/PhD Students

Students in the MD/PhD program that have chosen BMED as a major are considered joint students and have privileges at both institutions. MD/PhD students should register directly in both schools' systems (Emory-OPUS and Georgia Tech-OSCAR) each semester. Emory is the primary school for these students. See above section *7.1.5.3 MD/PhD* for registration information.

7.3 International Students

US immigration law dictates various enrollment options for international students. To ensure that an international student never falls out of compliance concerning their visa types, they should consult with the Office of International Education (OIE) for all possible exceptions to full-time (16 or 21 credit hours) enrollment. International students should also consult with OIE about employment options that coincide with reduced enrollment.

8 Program Milestones

8.1 Overview

The degree of Doctor of Philosophy recognizes proficiency and high achievement in research. After adequate preparation, the degree candidate must complete a searching and authoritative investigation of a special area in the chosen field, culminating in a written thesis covering that investigation. The thesis must be either an addition to the fundamental knowledge of the field or a new and better interpretation of facts already known. It must demonstrate that the candidate possesses powers of original thought, talent for research, and the ability to organize and present findings.

The requirements for each student in the doctoral programs in BME include satisfactory completion of a set of core courses in bioscience, data science, and engineering; passing a comprehensive qualifying examination; and completion of an oral proposal and defense of a doctoral thesis/dissertation following Institute policies. Each student must also complete a doctoral minor.

This section outlines the major steps of milestones that each student must complete to progress towards completing a degree. Official forms are associated with most of the milestones and are completed online.

8.2 Student – Advisor Matching

For all students who were not designed specific faculty advisors with their offers of admission, the matching process occurs between matriculation and mid-September of Year 1. Students are required to interview a minimum of four faculty members and then submit the Advisor Preference form indicating their top preferences for choice of thesis advisor. Students who participate in the optional summer lab rotations must also submit advisor preferences. Faculty members also submit a form indicating their preferences for students. The Associate Chair for Graduate Studies and relevant associated program directors review student and faculty preferences and make the official matches. Preferred matches are not guaranteed by the program, and consideration is given to space, funding, and equity.

8.3 Program of Study

The Program of Study (POS) form is due by **November 1 of Year 1** in the program. After consulting with their advisor, considering the expertise required for the chosen research area, the student must complete the POS form. Students must declare for each requirement of the curriculum the specific courses and terms for which they will register. Forms must be

submitted electronically. The PhD Academic Program Manager reviews each student's form and students receive notification of approval or required changes.

Students in the PKU program, who are based in Atlanta, must complete the Chinese language assessment (see Section 6.8.1 for details) in the first semester before submitting the proposed Program of Study.

8.4 Qualifying Exam

The qualifying exam contains both a written and oral portion. The written exam must be submitted to the committee three weeks before the oral exam. The oral exam must be completed between **August 1 and November 1 in Year 2** of the program. Students must have a minimum cumulative GPA of 3.0 to take the exams.

8.4.1 Exam Philosophy

The exam is structured to assess: the student's ability for independent thinking and decision making; knowledge and integration of engineering and biological concepts; and the application of this knowledge to interdisciplinary biomedical engineering problems. The exam is tailored to the student's area of research. The exam emphasizes the student's ability to integrate bioscience, engineering, and data science concepts to solve problems related to biomedical engineering. The committee will evaluate the correctness of the students' responses as well as judge the overall level of breadth, depth, and integration of the students' responses. Clarity and conciseness of the presentation of responses in very important.

8.4.2 Student Forms & Committee Member Preferences

Each student must submit a signed copy of the Academic Profile and Honor Code Pledge by **April 1 of Year 1**. In addition to describing academic background and research area, the student will provide the names of up to three BME faculty (primary or program) who could serve on a qualifying exam committee. The graduate committee does make final decisions for committee members and chair assignments and cannot guarantee that student preferences will be honored. Committee assignments will be announced no later than June.

8.4.3 Exam Committee

Students are evaluated on both the written and oral exams by a faculty committee consisting of three BME Program Faculty members with expertise in areas of traditional engineering, biological sciences, and data science. The graduate committee makes final committee member and chair selections considering student preferences, faculty time commitments, faculty service on multiple exam committees, and diversity of faculty examiners.

The student may meet with exam committee members to discuss the philosophy of the exam, the mechanics of the exam, and any other points the student or committee member deem appropriate.

8.4.4   Exam Date Selection

Each student must schedule the oral portion of the qualifying exam for a date/time when all members of the qualifying exam committee can be physically present. The oral portion of the exam must be held between August 1 and November 1 of the student's second year. Once the date and time have been agreed upon by the student and all committee members, the student must notify the PhD Academic Program Manager.

8.4.5   Written Exam Submission

The written portion of the qualifying exam consists of a 4-page written pre-proposal on a research topic in the student's research area. This can be, but is not limited to, the student's thesis research topic. The student should include one specific aim for the proposed research project and a corresponding literature review. Citations are not included in the 4-page limit.

The student's advisor may guide in developing the scope of the project and identifying relevant literature; however, they are not allowed to provide specific feedback on the written document.

Both student and advisor must sign and attest that they have adhered to these rules, and understand they not adhering to these rules violates the Honor Codes at Georgia Tech and Emory University.

The committee chair must contact the PhD Academic Program Manager if the projected examination date will be later than November 1. Failure to complete the qualifying exam by November 1 will result in the student being placed on academic probation, ineligibility for program support funds, and forfeited financial support. Sanctions will be lifted when the exam has been completed.

8.4.6   Oral Exam

The oral portion of the qualifying exam will be a 60–90-minute period, whereby each exam committee member has the opportunity to ask fundamental bioscience, engineering, and data science questions related to the students' submitted written proposal. It is the responsibility of the chair to ensure that questions are fair and cover the intent of the exam. The chair also has the responsibility of ensuring that the exam proceeds on time and within scope.

The thesis advisor may attend the oral exam as an observer. The advisor's presence is solely to ensure that the student receives a fair examination. The advisor should not volunteer any information nor ask any questions unless it relates directly to the conduct of the exam. The thesis advisor should not be present while the committee deliberates on a student's exam performance and exam outcome.

It is the student's responsibility to bring extenuating circumstances (i.e., the rationale for a delay in the exam) to the chair's attention before the exam begins. Once an oral exam is in progress, the student's performance must be evaluated.

8.4.7   Student Evaluation

Following the completion of the oral exam, the chair of the committee will lead discussions to evaluate a student's exam performance and exam outcome. The chair of the exam committee has the discretion to limit the length of the committee's discussions. The oral and written portions of the qualifying exam are evaluated by each committee member using the Milestones Evaluation Rubric. In addition, the chair of the committee will facilitate a pass/no-pass vote. It can be an open vote but must be a secret ballot if requested by any committee member. This vote is binding, and voting must take place before the exam committee's adjournment.

Exam results, factoring both the written and oral portions of the exam are as follows:

8.4.7.1   PASS:

If the vote is 3/0 or 2/1 in favor, the student passes the exam. The committee may make recommendations or conditions along with the pass. Details of the recommendations or conditions should be recorded on the Decision Form.

The exam committee may make recommendations (not strictly required) or conditions (required) based on its interpretation of – and with direct relevance to – the student's performance relative to the exam philosophy outlined above. Recommendations and conditions are subject to the review and approval of the Associate Chair for Graduate Studies.

The PhD Academic Program Manager will be responsible for tracking the completion of any required conditions. Successful completion of the conditions will be required for the student to progress in the doctoral program. All conditions mandated by the Qualifying Exam Committee must be met within one year of the Qualifying Exam date.

8.4.7.2   NO PASS:

If the vote is 1/2 or 0/3 and the exam is being conducted for the first time for that student, the student must retake the exam. The committee will summarize its decision and detailed recommendations or conditions on the Decision Form and, if desired, via a supplemental memo to the Associate Chair for Graduate Studies. In most cases, the same committee will administer the retaking of the exam and will do so within 3 months.

8.4.7.3   RETAKE:

A student may retake the exam only once. At the time of the retake, the student must meet the GPA requirement and otherwise be in good academic standing. Retakes should be scheduled as early as possible,

contingent upon the readiness of the student and meeting any conditions. The committee may vote to pass the student outright or with recommendations or conditions. If the committee votes to fail the student a second time, the student must withdraw from the PhD program and may elect to pursue the non-thesis or thesis-based GT Master's degree.

8.4.8 Notification and Documentation of Results

Students and their faculty advisors will be notified of the exam results in writing via an emailed letter from the Associate Chair for Graduate Studies. All students who pass will be encouraged to follow up with their exam committee chairs to debrief. A student who does not pass will meet with the exam committee chair and thesis advisor to discuss the results and make appropriate plans for the student's next steps. They may also meet with the Associate Chair for Graduate Studies if they would like further clarification.

8.5 Approval of Minor

Georgia Tech policy dictates that all doctoral degree candidates complete an academic minor consisting of nine credit hours. The BME curriculum is designed to offer students flexibility such that a student can typically fulfill the minor requirement using courses in the Engineering/Data Science/Bioscience Fundamentals category. The specific Doctoral Minor form is required by the Georgia Tech Office of Graduate Studies. This form must be completed by the student before graduation.

8.6 Thesis Committee

Students that have satisfactorily completed their qualifying exam must complete the departmental Request for Approval of the Thesis Committee form prior to preparing and orally defending the **thesis proposal by September 15th of Year 4**. Students should contact their proposed committee members for their approvals before submitting the thesis committee form. The form must then be completed by the student, signed by all proposed members (including the thesis advisor), and submitted to the Associate Chair for Graduate Studies.

The list of proposed members must be accompanied by a short justification of committee makeup. A doctoral student's thesis committee must consist of at least five members (including the advisor). The primary advisor or one of the co-advisors must be BME Program Faculty. Three of the thesis committee members must be BME Program Faculty. One member must have no affiliation with the Department of Biomedical Engineering (neither a BME Primary nor Program Faculty member) and will preferably be from a biosciences area of Georgia Tech, Emory, or a collaborating institution.

If a committee member outside of Georgia Tech or Emory University is selected, the Dean of Laney Graduate School must approve the proposed member. Before the thesis committee form can be approved, the student must submit the completed form and an NIH Biosketch for the proposed outside member to the PhD Academic Program Manager, who will facilitate its review by the Dean of LGS. If approved, the student can move forward with the approval process and review by the Associate Chair of Graduate Studies. Members of the

Georgia Tech or Emory University who are not faculty but who possess expertise relevant to the dissertation project must receive the same approval described above. Industry professionals may be suitable but also must be reviewed via the approval process above.

If a student has an official faculty co-advisor, the co-advisor has the same responsibilities and privileges as the other committee members. However, the co-advisor cannot be counted as one of the five required members of the thesis committee, except for the committee for a BME-PKU student. There should be a balance between "engineers" and "bioscientists" on the thesis committee.

8.6.1 Changes to the Thesis Committee

If the membership of a dissertation committee needs to change, students should submit a new Request for Approval of Thesis Committee form and Admission to Candidacy form (if already submitted). When a student submits a completed dissertation, the membership of the dissertation committee must match the members listed on the most recent Request for Approval of Thesis Committee form submitted and approved by the Associate Chair of Graduate Studies and the most recent Admission to Candidacy form.

8.6.2 Research Updates to the Thesis Committee

Students are expected to give regular updates to their thesis committees on the progress of their research. These updates may be accomplished via written and oral means and should occur at least once a year between proposal and defense.

8.7 Admission to Candidacy

Students must complete the Request for Admission to PhD Candidacy form no later than **September 15th of Year 4.** The form required is a Georgia Tech form. Students do not need to complete candidacy forms at Emory. If approved, the PhD Academic Program Manager will communicate to Emory when a student successfully enters candidacy.

To qualify for candidacy, doctoral students must have:

- completed their required coursework (21 credits + integrative core + advanced seminar + BMED 7004/7005/7001),
- completed JPE 600, JPE, 610, and TATT0 600,
- completed their RCR training (both online and in-person portions),
- passed their qualifying exam (and fulfilled any conditions, if applicable),
- formed and obtained approval of their thesis committee,
- successfully completed their thesis proposal with oral presentation.

The Request for Admission to PhD Candidacy form is an Institute form and will be reviewed by the Associate Chair for Graduate Studies, the PhD Academic Program Manager, and the Georgia Tech Office of Graduate Studies.

8.8 Proposal

After forming the thesis committee and before **September 15th of Year 4**, a student must make a formal presentation of the proposed research to the committee. The well-conceived

proposal will help the student: (a) develop critical questions, (b) lay the foundation for research, (c) isolate pending problems and suggest actions to avoid them, (d) serve as a "road map" for the research, and (e) think through the whole process, using an integrated approach.

The proposal should contain a concisely stated hypothesis. At the time of the proposal, the student should be ready to move from perception and comprehension of critical questions to the resolution of the problem. A successful proposal presentation will explain why the topic is appropriate and outline a plan for the research. While the proposal represents the beginning of the research, a well-thought-out plan should serve to guide the student and minimize problems later in the process.

8.8.1 Scheduling the Research Proposal

The student is responsible for surveying the thesis committee to establish a mutually convenient date and time for the presentation. The student must also reserve space and the necessary audio/visual equipment for the presentation with the assistance of the PhD Academic Program Manager for Georgia Tech locations and the Emory Administrative Assistant for Emory locations. The student should submit a copy of the proposal to all committee members at least two weeks before the presentation.

8.8.2 Announcing the Research Proposal

Students must submit the details of the proposal presentation (date, time, location, committee members, title, and abstract), to the PhD Academic Program Manager via the Proposal/Defense Announcement form, at least two weeks before the scheduled presentation. The Manager will distribute an announcement inviting the department to the proposal.

8.8.3 Evaluating the Research Proposal

Students must ensure that each thesis committee member completes a BME Milestone Evaluation form for their proposal. All completed rubrics are routed to the PhD Academic Program Manager.

8.9 Degree Application

As BME students near completion of their programs and are planning the final steps (i.e., completion of research and thesis defense), they must submit degree applications to both institutions. The Georgia Tech form, the Online Application for Graduation (OAG), is accessible via the student's OSCAR account. The Emory form, the Application for Degree, is accessible via Emory's website. At Emory, dual or joint degree students applying for their degrees must submit a paper form; they cannot apply for their degree in OPUS.

Deadlines vary between the two schools. The Georgia Tech deadline always falls in the term that precedes the planned term of graduation. The Emory application can only be submitted in the semester of graduation. Students should plan well in advance to ensure that the deadlines are met.

If, after submitting the original application to Georgia Tech, circumstances dictate that more time is needed to complete the program, the student must inform both institutions of the delay. Students must re-apply at both Georgia Tech and Emory for a future term. Students should consider the options for registration and payment during the planned term of graduation at this stage (see Section 9.2).

8.10 Thesis Defense

After adequate preparation, a candidate must complete a searching and authoritative investigation of the chosen field, culminating in a written thesis covering that investigation. An oral defense will be scheduled on the subject matter for the thesis and the field in which it lies. The defense includes two portions: an open presentation of the research/thesis and a closed question and answer session between the student and the thesis committee. Careful attention must be paid to the institutional deadlines for thesis submission. The defense should be scheduled no later than one month before the submission deadline to leave ample time for edits required by the thesis committee.

8.10.1 Format of the Thesis

Georgia Tech maintains a [Thesis Manual via the Graduate Studies](#) & Research Office website. The website also includes the Forms and Deadlines sections. BME students should follow all Georgia Tech guidelines for creating and submitting their theses.

8.10.2 Requirements for Defense

In addition to determining with the faculty advisor the student is ready to complete and defend the thesis, a student must submit the applications for the degree by the published deadlines and be registered for the term in which the defense presentation occurs. If an enrollment waiver is applicable, no registration is required (see Section 9 for registration options for the last term of the program).

8.10.3 Scheduling the Defense

The student is responsible for surveying the thesis committee to establish a mutually convenient date and time for the defense. The student must also reserve space and the necessary audio/visual equipment for the presentation. The student should submit a copy of the preliminary draft of the thesis to all committee members at least two weeks before the defense presentation.

8.10.4 Announcing the Defense

Students must submit the details of the defense presentation (date, time, location, committee members, title, and abstract), to the PhD Academic Program Manager via the Proposal/Defense Announcement form, at least two weeks before the scheduled presentation. The Manager will distribute an announcement inviting the department to the defense.

8.10.5 Forms Needed for the Defense

Students should prepare the following forms/documents before the defense presentation: Georgia Tech Certificate of Thesis Approval for Doctoral Students, Emory Report of Completion of Requirements for Doctoral Degree, and the Emory

Dissertation Approval Form that serves as the cover sheet for the final draft of the thesis. All forms and guidelines are available via the [Georgia Tech Graduate Studies](#) and [Emory Laney Graduate School](#) websites. In addition, all committee members must complete a BME Milestone Evaluation for the defense (completion of the degree will not be approved until these milestone forms are submitted).

8.11 PKU Specific Requirements

8.11.1 BME Project Initiation

Students in the PKU program (from both Atlanta and Beijing campuses) are required to submit a PKU BME Project Initiation Form to the Office of Sponsored Programs at the time of proposal. A copy should be submitted to the Academic Office with the Admission to Candidacy Form.

8.11.2 Travel to Secondary Campus

Students in the PKU program generally follow the same curriculum and milestones as the BMED students. However, students in this program are required to obtain co-advisors on the secondary campus with which to collaborate on their research projects. The students will travel to the secondary campus to work with their co-advisors for six to twelve months. The timing is generally expected in the third year of the program after coursework is completed and qualifying exams are passed. Ultimately, the decision should be made between the student and their advisors/co-advisors with consideration given towards research progress.

Students must plan their departure and return timetables to coincide with Georgia Tech's official semesters due to the administrative process involved (including finances, registration, and immigration support). Students may request a non-continuous year of residency at the secondary campus from the director of the PKU program. The travel grant afforded to students in the program will not increase even if a non-continuous residency year is approved (i.e., multiple flights will be subject to the same overall grant budget). Travel on a non-continuous schedule must still coincide with Georgia Tech semesters (i.e., the minimum length of time at one place or the other is a full semester).

8.11.2.1 Atlanta Student Traveling to Beijing

Students planning to travel from Atlanta to Beijing for their residency must prepare to obtain a Chinese "X" visa. Students must have a valid passport from their home country. A JW202 form must be obtained from the Peking University BME Program Manager to begin the process on the Chinese side. Other supporting documents from the BMED department may be necessary to obtain the visa from a Chinese consulate or embassy. The department's PKU Program Support Coordinator will assist students with receiving their visas.

On the US side, the Georgia Tech Office of International Education (OIE) will be a valuable resource. Though these students are not participating in an official OIE Study Abroad program, the process is similar.

Students must complete and submit the OIE Study Abroad Participant Profile and Study Abroad Assumption of Risk & Release forms to the Georgia Tech/Emory PhD Academic Program Manager at least two months in advance of planned travel. Students should also consult all other resources on the OIE website for study abroad student students.

Atlanta students who are not US Citizens or Permanent Resident cardholders should consult with OIE about issues relating to their US immigration status.

The financial process is similar to the financial process in Atlanta. When using Coulter or other required funds that are partial, a GRA supplement will be required. Students with partial fellowships should select GRA as their "Current Status" on the support form along with the appropriate fellowship from the drop-down list of fellowship options. Students will pay GRA tuition & fees and receive payment via the BME Finance Office/Georgia Tech payroll. Students with full fellowships should choose Fellowship as their "Current Status."

REQUIRED DOCUMENTS
1. Georgia Tech Paperwork
   a. OIE Study Abroad Participant Profile
   b. OIE Study Abroad Assumption of Risk & Release
   c. Finances – Whitaker fellowship is partial funding so a GRA supplement is necessary. Update Student Support Form accordingly.
2. US Passport
3. Chinese Visa (1 year)
   a. For student visas, contact the Chinese Embassy/Consulate
   b. Identify whether student needs Single-Entry or Multi-Entry visa (Residency Permit)
   c. Work with BME and/or PKU for any additional documentation which might be required
   d. When applying for a visa, please remember to bring along with you your valid passport, the original copy of the university's admission notification, and a Visa Application Form for Foreign Students Studying in China (also known as the JW201/JW202 form). Make sure that your letter of admission and your JW202 form is handed back to you together with your passport after obtaining your Chinese visa. You will need these documents to apply for your Residence Permit after your arrival in Beijing.
   e. International Students who will be studying in China for more than 6 months are required to obtain a Student Visa, also termed as 'X' Visa.
   f. Important: The Student Visa/'X' Visa will only be valid for 30 days after your arrival. You must apply for a Residence

Permit within these 30 days to obtain legal status in China at Beijing Municipal Public Security Bureau (BMPSB).

4. Letter of admission from Peking University (original copy)
5. Traveler's check or bank draft for your tuition fees payment.
6. Passport size photos (at least 6 copies)
7. Physical examination record and blood test reports (if available)

*NOTE: Consider having important documents, such as medical prescriptions and marriage certificates (if necessary), translated into Mandarin before leaving the country.

8.11.2.2 Beijing Students Traveling to Atlanta

Students planning to travel from Beijing to Atlanta for their residency must obtain documentation of funding that will cover the published rates by Georgia Tech for international students. Students may receive Chinese Scholarship Council (CSC) funds that are supplemented by Coulter funds. The CSC award letter and a PKU program letter indicating supplemental funds must be submitted to the PhD Academic Program Manager in Atlanta. The Program Manager will obtain a DS-2019 form; students will need this form during their "J-1" visa process.

The OIE website provides a multitude of resources for international students including housing, financial, and insurance information.

All F-1 and J-1 students are required to have supplemental health insurance through Georgia Tech while in the US. PKU Beijing students are responsible for paying for health insurance through their Georgia Tech accounts. All international students are enrolled in the BlueCross/Blue Shield (BCBS) student health insurance plan. Tuition and fees will be waived.

As Coulter funds for Beijing students' residency is limited to one year, any additional time beyond one year must be covered financially by the Atlanta-based co-advisor. While in Atlanta, students must continue to choose PKU-Beijing for their "Current Status" on their support forms.

REQUIRED DOCUMENTS
1. Passport from home country
2. U.S. Visa (F-1/J-1) *Contact the U.S. Embassy/Consulate http://oie.gatech.edu/content/applying-f-1j-1-visa.
    a. Preparing for the Visa Appointment:
        a. Pay the I-901 "SEVIS Fee." The easiest way to do this is through www.fmjfee.com, but you can do so by mail. See the I-901 FAQ for more information. To pay the I-901 fee, you will need your SEVIS Identification number (N000) found at the top, right corner of your I-20 or DS-2019. Make sure to bring your payment receipt to your visa application appointment.

       b.   Complete the online visa application (DS-160).

       c.   Pay the Visa Application Processing Fee. Students from certain countries will also have to pay a Visa Reciprocity Fee.

  b. When applying for a Visa, the following are needed at the embassy appointment:

       a.   I-20/DS-2019 from Georgia Tech

       b.   Passport (valid at least 6 months beyond your Program Start Date)

       c.   I-901 Fee payment receipt

       d.   Visa Application Fee

       e.   DS-160 confirmation receipt

       f.   Admission letter from Georgia Tech

       g.   Verification of financial resources (this should be the same documentation that you sent to Georgia Tech)

       h.   Proof of English proficiency (TOEFL)

3. I-20/DS-2019 from Georgia Tech 4) I -94
4. Proof of Immunizations required by Georgia Tech

8.12 Associated Degree Programs

As the associated degree programs (BIOE, BINF, CSE, ML, ROBO) are interdisciplinary and have their structure, the details on curricula and program milestones can be obtained from the individual program handbooks and leadership. MD/PhD Students follow the requirements and steps of the particular major/program for which they participate.

[Bioengineering](#) (BioE)

[Bioinformatics](#) (BINF)

[Computational Science and Engineering](#) (CSE)

[Machine Learning](#) (ML)

[Robotics](#) (ROBO)

9 Degree Completion & Graduation

9.1 Degree Completion Deadline

Students are expected to complete their dissertations and apply for their degrees within six years, per Laney Graduate School (LGS) guidelines. If a student has not completed their degree by the end of their seventh year, the program may grant a one-year extension. The program must submit a notice of this extension to the Dean of LGS no later than **August 1 of Year 7** (the summer before the start of Year 8). The notice must contain a completion timeline signed by both the student and the dissertation committee chair or co-chairs. Students who enroll for this

extension year may be responsible for tuition depending on the agreement between the student and their faculty advisor.

If a student has not completed their degree at the end of their eighth year, the student may continue work for at most one additional academic year and only with the approval from the Dean of Laney Graduate school. To obtain approval, the program must submit a request to the Dean of LGS no later than **August 1 of Year 8** (the summer before the start of Year 9). The request must:

- Outline the reasons the student has not completed;
- Consider whether the student needs to repeat any part of the qualifications for candidacy or obtain approval of a new dissertation prospectus; and
- Present a detailed completion timeline signed by both the student and the dissertation committee chair or co-chairs.

The program may require re-examination or other demonstration of the currency of a student's preparation beyond the eight-year limit. A student beyond the eight-year limit who fails to obtain an extension for their program, or who exhaust the extension granted without completing all requirements for the degree, will be dismissed from the program. No request for an additional extension of time will be considered, except by application to the Dean of LGS, and none will be granted except in extraordinary circumstances. A student on an extension may not request a leave of absence.

9.1.1 Request for Extension of Program Timeline

In the case of unexpected research results, students must request extensions to the timeline of their programs. For degree application purposes, "reactivation" petitions on the Georgia Tech side are required. For other requests of alternate plans (such as part-time status) or any extenuating circumstances that may be outside typical requests, students should consult with the PhD Academic Program Manager and BME's Retention Advisor. Petitions to the Associate Chair for Graduate Studies and the BME Graduate Committee may be necessary. The Associate Chair and/or Graduate Committee will consider all requests on a case-by-case basis. In addition to departmental requirements, institutional guidelines and requirements must be met.

9.2 Registration Payment in the Term of Graduation

Registration and payment options for the final term in which a graduate student is scheduled for graduation are listed below. The student and faculty advisor should discuss these options consulting the Academic and Finance Offices when necessary. The decision on which option will be used must be communicated to both offices by the Institute's application for degree deadline, which occurs in the term before the term of planned graduation. Unexpected changes that may alter/delay the student's plan after this decision is made must be discussed as soon as possible with the Academic and Finance Offices.

9.2.1 Option 1: In School Entire Term

A student who will work in the lab the entire term, in addition to defending their thesis and submitting all required paperwork by the Institute's outlined deadlines for graduation, should enroll in the standard 21 credit hours and be paid normally as a GRA or by Fellowship. This represents the same process as previous terms.

NOTE: The following options (2-4) are not for students on Fellowships. Those students can use Option 1 only if receiving fellowship funding during the term of graduation.

9.2.2 Option 2: In School Part of Term

A student who plans to work until the thesis defense and submission of paperwork then leave school for outside employment or other reason has two options depending on when the defense is scheduled.

Reduced Course Load with No Tuition Waiver: If the thesis defense is scheduled for a date before Georgia Tech's withdrawal date (published by the Registrar's Office and typically around two-thirds of the way into the term) the student should enroll in a 1-credit hour and be paid as a GA (not GRA) only through the defense date. In this case, Georgia Tech's minimum enrollment requirement of three credit hours is waived. The student should register for one credit of thesis hours (BMED 9000) and must pay for that hour personally. The student is hired as a Graduate Assistance (not GRA, meaning no tuition waiver is available) and should be paid for the part, or all, of the term based on the wage, negotiated with the faculty advisor. The student and faculty advisor may also negotiate reimbursement of the tuition and fees. The 1-credit hour option may be used only one time.

If issues that prolong the completion of the program arise and a student has exhausted their 1-credit hour option, the student must then register for 3-credits of thesis hours and must pay those hours personally. Typically, the student is not working or paid and a tuition waiver is not applied.

Full Course Load with Tuition Waiver: If the thesis defense is scheduled for a date after Georgia Tech's withdrawal date, the student should enroll in 21-credit hours and be paid as a GRA for the entire term.

9.2.3 Option 3: Away From School & Working on Thesis Remotely

A student who will no longer be working in the lab by the start of the term, but will be working on their thesis remotely and returning to campus only for the thesis defense, should enroll in a 1-credit hour and should not be paid for any duration of the term.

9.2.4 Option 4: Completely Finished; Missed Deadline for Graduation in the Previous Term

A student who will defend the thesis and submit all paperwork by the end of the first week of the term should submit an Enrollment Waiver and should not register for any credit hours. If the student will be leaving for outside employment or other reasons immediately, then no payment should be made for any duration of the term. If the student will be working for some, or all, of the term, that individual may be hired as a

non-student (e.g., as a Tech Temp). A student is eligible for this option only if they were registered in the previous term.

NOTE: Emory does not have an enrollment waiver option and requires that all students be registered in the final term of graduation. Students using the enrollment waiver at Georgia Tech must still register in BMED 9999R at Emory.

9.3   Degree Application

Degree applications must be submitted well in advance of the thesis defense and planned graduation. Students must apply for graduation at both Georgia Tech and Emory.

9.4   Thesis Format Check

Shortly after the writing process has begun, a student should submit a draft of the thesis to the Georgia Tech Graduate Studies Office for a format check. Students should not wait until the document is complete or until after the defense to submit their document for a format check; an early format check will help expedite the final draft process later on. The latest that a format check can be scheduled is one week before the final thesis submission deadline. The format check may be done in person or via e-mail submission.

9.5   Thesis Submission

The Graduate offices of Georgia Tech and Emory use the same third-party Electronic Theses & Dissertations (ETD) submission system. Students need to submit their theses electronically to Georgia Tech only. The Georgia Tech Thesis Manual provides specific instructions on submitting electronically.

9.5.1   Policy on Open Publication

According to Georgia Tech policy, masters and doctoral theses should be openly published. Upon the request of the student, and with the consent of the faculty advisor, the electronic submission of the thesis can routinely be withheld from circulation for one year. Research arrangements that would preclude publication for an extended time or permanently for reasons of national security or a sponsor's proprietary interest, however, are not appropriate for dissertations or theses. It is anticipated that all doctoral work will be published in the open, refereed literature.

9.6   Required Forms

Forms and documents required during the graduation process can be found https://bme.gatech.edu/bme/projected-lifecycle. All institutional level forms (e.g., Doctoral Minor, Admission to Candidacy) must be submitted before a student can be cleared for graduation at each institution. Students are responsible for ensuring that all requirements have been met and all forms and documents submitted. The PhD Academic Program Manager is available to assist students with any questions during this process.

9.7   Commencement

Students in the BME program may attend either the Georgia Tech or Emory commencement ceremonies and must notify both institutions about where attendance is planned. Students

must purchase their regalia from the Georgia Tech or Emory bookstore, depending on which ceremony will be attended. Students attending the Georgia Tech commencement must purchase caps and gowns. Students attending the EU commencement must purchase all applicable regalia. The faculty advisors will attend and hood their students (or secure their alternates in the case that attendance is not possible).

9.8 Diplomas
Diplomas for students in the BME program are produced by Emory; it is critical that students provide their current mailing address before commencement. The diplomas include the seals from both Georgia Tech, Emory, and PKU (when applicable).

9.9 Transcripts
Students in the BME and PKU programs can order transcripts directly from Georgia Tech, Emory, and PKU as needed. Transcript fees are assessed by the school where the primary advisor's lab is located. To avoid a per transcript fee from Georgia Tech for Emory-lab students, those students should not order through OSCAR. Instead, these students should use the Georgia Tech Transcript Request form found on the Georgia Tech Registrar's Office's website.

9.10 Associated Degree Programs
As the associated degree programs (BIOE, BINF, CSE, ME, ROBO) are not associated with Emory, students need only follow the Georgia Tech guidelines and deadlines for submitting final degree paperwork. Students in these programs should consult with the leadership in their particular programs to ensure that all requirements are met. MD/PhD students follow the requirements and steps of the particular program in which they participate.