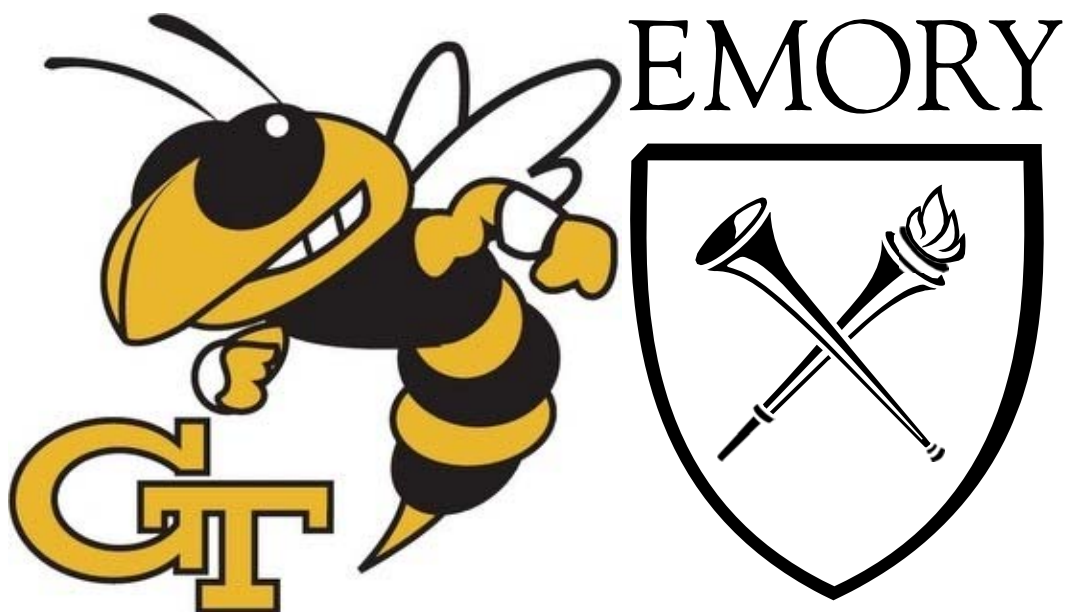


GRADUATE PROGRAM

HANDBOOK



2017 – 2018

The purpose of the Wallace H. Coulter Department of Biomedical Engineering graduate program handbook is to present selected, relevant, program-related information. It is not exhaustive in coverage. Send updates to gradstudies@bme.gatech.edu.

All BME students must also comply with Laney Graduate School policies. Some Laney policies are outlined in this handbook. Please follow this [link](#) for the 2017-2018 Laney handbook.

TABLE OF CONTENTS

CHAPTER 1 – Introduction & Departmental Overview	5
1.1 Purpose of this Handbook	5
1.2 Overview of the Department	6
1.3 History of the Department	6
1.4 Graduate Programs	7
1.5 Administration	8
1.6 Faculty	8
1.7 Staff	9
1.8 Degree Programs	10
CHAPTER 2 – Student Admission Process	11
2.1 Timeline	11
2.2 Requirements for Consideration	11
2.3 Application Submission	12
2.4 Application Review	13
2.5 Campus Visits	13
2.6 Decisions	13
2.7 International Student Paperwork	13
2.8 Student Responses	14
2.9 MD/PhD Admission Process	14
CHAPTER 3 – New Student Information	15
3.1 Final Admission Paperwork	15
3.2 Orientation	15
3.3 Faculty Advisor Assignments	16
CHAPTER 4 – Finances	18
4.1 Funding Source	18
4.2 Tuition & Fees	19
4.3 Cost of Attendance Estimate	20
4.4 Stipends	20
4.5 Student Support Forms Database	21
CHAPTER 5 – Roles & Responsibilities of Faculty & Students	24
5.1 Honor Codes	24
5.2 Faculty Advisor-Student Relationship	24
5.3 BME Program Faculty Membership Criteria & Application Process	25
5.4 Guidelines for when a Faculty Member Leaves Georgia Tech or Emory	26
5.5 Student Performance Concerns	28
5.6 Record Keeping	30
5.7 Student Petitions	30
CHAPTER 6 – Business Policies	31
6.1 Building Access	31
6.2 Computer Access & Usage	31
6.3 Copies	31
6.4 Desk/Office Space	32
6.5 Fax Machines	32
6.6 Health Insurance	32
6.7 Immunization Records	32
6.8 International Students	32
6.9 Mailboxes	33
6.10 Name Changes	33

6.11 Parking	33
6.12 Phones	33
6.13 Purchasing	33
6.14 Recycling	34
6.15 Room Reservations	34
6.16 Safety Guidelines	34
6.17 Shuttle Service between Campuses	34
6.18 Student IDs	34
6.19 Travel	35
6.20 Vacation	35

CHAPTER 7 – Curriculum & Training **36**

7.1 BME PhD Program Overview	36
7.2 Bioscience and Engineering Training	37
7.3 Ethics Training	37
7.4 Professional Development Training	38
7.5 Thesis Hours	39
7.6 Secondary Institutional Placeholders	39
7.7 Master’s Degree Program	39
7.8 PKU Program	40
7.9 Associated Degree Programs	40

CHAPTER 8 – Registration **41**

8.1 BME PhD Program	41
8.2 Master’s Program	42
8.3 Associated Degree Programs	42
8.4 International Students	43

CHAPTER 9 – Program Milestones **44**

9.1 Student/Advisor Matching	44
9.2 Program of Study	45
9.3 Qualifying Examination	45
9.4 Thesis Committee Approval	48
9.5 Research Proposal	49
9.6 Admission to Candidacy	50
9.7 Approval of Minor	50
9.8 Research Updates to the Thesis Committee	50
9.9 Degree Applications	50
9.10 Thesis Defense	50
9.11 Degree Completion Steps & Final Paperwork for Graduation	51
9.12 PKU Program Travel to Secondary Campus	53
9.13 Master’s Students	56
9.14 Associated Degree Programs	56

CHAPTER 10 – Degree Completion & Graduation **57**

10.1 Registration & Payment in the Term of Graduation	57
10.2 Degree Applications	58
10.3 Thesis Format Check	58
10.4 Thesis Submission	59
10.5 Required Forms	59
10.6 Commencement	59
10.7 Diplomas	59
10.8 Transcripts	60
10.9 Request for Alternates or Extensions of Program Timeline	60
10.10 International Student Immigration Extensions	60
10.11 Associated Degree Programs	60

APPENDICES	61
A. DEPARTMENT DIRECTORY	61
Main Office	61
Faculty	63
Staff	63
B. INTERNET RESOURCES	65
General Information	65
Associated Degree Programs	65
Honor Codes	65
Finances	65
Registration	66
Degree Completion & Graduation	66
Building & Campus Resources	66
C. FORMS	68
D. TA ROLES AND RESPONSIBILITIES	69
E. THESIS FORMAT	70
F. BME & PKU GRADUATE STUDENT CHECKLIST	73

1

INTRODUCTION & DEPARTMENTAL OVERVIEW

1.1 PURPOSE OF THIS HANDBOOK

This handbook outlines the policies and procedures of Wallace H. Coulter Department of Biomedical Engineering (BME) graduate programs. Topics covered include the structure of the department, expectations of faculty and students, the admission process, new and current student information, registration, finances, degree requirements and graduation information, campus resources, and institutional processes.

The student information in this handbook is intended for those in all of the various academic programs supported by the department. However, some details such as curriculum are primarily focused on the Joint Georgia Tech and Emory Biomedical Engineering Ph.D. Program. Reference points for students in the other majors are highlighted under Associated Degree Programs as needed.

This handbook is intended as a supplement to 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 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 faculty and staff contact information, websites, and sample forms.

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

1.2 OVERVIEW OF THE DEPARTMENT

The Wallace H. Coulter Department of Biomedical Engineering is a joint effort between The Georgia Institute of Technology and Emory University. The department is a unique partnership between a public and a private institution. The vision is to provide superb education and research in biomedical engineering with an emphasis on applications to human health.

The department offers several graduate level programs (also referred to as majors). The Doctor of Philosophy (PhD) program in Biomedical Engineering, often called the BME Program, is currently ranked third in the country by *U.S. News & World Reports*. Graduates of this program receive degrees jointly conferred by Georgia Tech and Emory. A second joint program, added in 2009, offers a PhD degree conferred by Georgia Tech, Emory, and Peking University (China). The other programs offered—Bioengineering, Bioinformatics, Computational Science & Engineering, Machine Learning, and Robotics—are interdisciplinary programs with various departments at Georgia Tech. Graduates of these programs receive degrees conferred by Georgia Tech.

Links to the main departmental website and the research areas listing the faculty members involved can be found in Appendix B.

1.3 HISTORY OF THE DEPARTMENT

In the mid-1990s, the current Georgia Tech Provost and Vice President Michael E. Thomas and the Emory Dean of Medicine Thomas J. Lawley established an Advisory Committee of Georgia Tech and Emory faculty to address new opportunities in biomedical engineering. The Committee met initially on June 2, 1997 and was charged to develop a set of recommendations for an innovative and unique joint Department of Biomedical Engineering between Georgia Tech and Emory that would enable both institutions to maximize research and educational opportunities in fields of intersecting biomedical interest. The Committee was tasked with completing the recommendations quickly and was required to report to Dr. Thomas and Dr. Lawley no later than August 15, 1997. The Wallace H. Coulter Department of Biomedical Engineering was established in September 1997.

The Biomedical Engineering Department is named in honor of Wallace Henry Coulter.

Recognized as one of the most influential inventors of the twentieth century, Wallace Coulter studied electronics as a student at Georgia Tech in the early 1930s. Mr. Coulter developed the "Coulter Principle," a theory that gave birth to both the automated hematology industry and the field of industrial fine particle counting. His "Coulter Counter," a blood cell analyzer, is used to perform one of medicine's most often-requested and informative diagnostic tests, the complete blood count. With his entrepreneurial insight, Mr. Coulter positioned the Coulter Corporation as the undisputed leader in the diagnostic industry. In October 1997, the Coulter Corporation was acquired by Beckman Instruments, Inc., and is now known as Beckman-Coulter, Inc. For more information, see www.whcf.org

The Biomedical Engineering building on the Georgia Tech campus is named in honor of Uncas A. Whitaker.

Born to a Missouri legislator, Uncas Whitaker spent his boyhood and received his early education in Missouri. After receiving mechanical and electrical engineering degrees from Massachusetts Institute of Technology and Carnegie Institute of Technology, respectively, and a law degree from the McKinley School of Law, in 1941 he founded the company that became AMP, Inc. In less than twenty years he developed his company into one of the giants of American industry. In the early 1960's, Mr. Whitaker and others envisioned a thriving new field that combined engineering and medicine to improve health care--biomedical engineering. Realization of this vision was aided by his many contributions during his lifetime and the establishment of the Whitaker Foundation shortly after his death in 1975.

1.4 GRADUATE PROGRAMS

The department offers graduate degrees in the following majors:

- Joint Georgia Tech and Emory Biomedical Engineering Ph.D. Program
- Georgia Tech/Emory/Peking University Biomedical Engineering Ph.D. Program
- Georgia Tech Biomedical Engineering BioID Master's Program
- Interdisciplinary Graduate Programs (Georgia Tech only)
 - Bioengineering (BIOE)
 - Bioinformatics (BINF)
 - Computational Science & Engineering (CSE)
 - Machine Learning (ML)
 - Robotics (ROBO)

With the exception of the BioID Master's Program, students are considered for and admitted to doctoral level programs. Master's degrees are offered only under special circumstances when a doctoral student is unable to complete the doctoral program such as in the case of a student who does not pass the Qualifying Exam. Both MS and PhD candidates are required to complete theses/dissertations.

All majors other than BME and PKU are associated degree programs and are interdisciplinary. As such, they have leadership and structure separate from the 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 department.

While closely related to the BME program, the PKU program does differ in administrative processes. Whenever needed, the Graduate Program Coordinator and/or the director of the PKU program will make clear to students what processes are different and how they should be handled. Students that complete the BME 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 other 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. Students must apply through the MD/PhD office at the home institution of the medical school such as Emory School of Medicine or Georgia Regents University (see Appendix A). BME majors in the MD/PhD program from Emory are treated as Emory students for academic and financial purposes, while other majors are treated as Georgia Tech students— meaning that they follow the same academic and financial processes (e.g., registration, tuition and fees, waivers, accounting) as other departmental students.

1.5 ADMINISTRATION

The faculty body is responsible for establishing and maintaining the academic policies of the department aligned with Institute and Board of Regents guidelines. The Chair is primarily responsible for implementing strategic goals, the vision, and building culture that set the direction of the department and is assisted by the Associate Chairs while the Assistant Director, Administration/HR ensures the department's daily activities are executed by department staff and run smoothly. Students have access to administrative staff that will support them in the areas of academics, finance, information technology, and operations. See Appendix A for details on the individuals who fulfill the various faculty and staff roles.

1.6 FACULTY

Faculty members have a myriad of responsibilities including the advisement and mentoring of students, research in their areas of interest and expertise, managing the financial aspects of their labs, and instruction at the undergraduate and/or graduate level. The Associate Chair of Graduate Studies has primary oversight of the program. The Director of Graduate Training manages curriculum and other training concerns.

Primary & Program Faculty Member

Faculty members with primary 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” in each program. Each academic program has its own criteria for Program Faculty members. See the various associated degree program resources for information on program faculty information. See Chapter 5 for the BME Program Faculty Membership criteria and application process.

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 the graduate program are described below.

Admissions and Recruitment Committee

This committee oversees the application review process and makes recommendations on admission decisions. The chair works with the directors of the various programs (BME, BIOE, BINF, CSE, ML, PKU, ROBO) to make admission decisions.

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 programs of study, 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 review process managed by the Associate Chair for Graduate Studies and Director of Graduate Training in collaboration with existing student committee members. Students serve a two-year term with appointment in alternating years to ensure continuity. Factors heavily considered for appointment include year of matriculation, location of lab (Georgia Tech/Emory), and any other criteria deemed necessary by the committee to maintain diversity of representation.

PKU Graduate Program Committee

This committee is led by the director of the PKU program and has faculty members from both the Atlanta and Beijing sides. This committee has responsibilities similar to the aforementioned Graduate Committee specifically for students in the PKU program.

Georgia Tech and 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. The 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 matters with the Associate Chair for Graduate Studies.

1.7 STAFF

Academic Office

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

Advisor) is the primary contact person for academic matters, institutional policies, and required paperwork related to the graduate program. The Corporate Relations Manager in the Academic Office is the primary contact for career-related matters.

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 online support forms and faculty members are responsible for reviewing and approving these forms. The Academic and Finance Offices work in conjunction to ensure that student tuition waivers are handled appropriately.

Administrative Staff

The department's administrative staff provides support in the 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, provide assistance with various policies, procedures, and required forms and documents.

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.

1.8 ASSOCIATED DEGREE PROGRAMS

Associated degree programs of Bioengineering (BIOE), Bioinformatics (BINF), Computational Science & Engineering (CSE), Machine Learning (ML), and Robotics (ROBO) in which the Department participates are interdisciplinary in and have program leadership separate from the department. The MD/PhD program also has its own leadership at Emory. The Associate Chair of Graduate Studies works closely with faculty directors of the associated programs on admission, financial, and other student-related concerns. Some degree programs have separate staff persons for academic advisement, financial, and business support. The department has ultimate decision-making responsibility for students assigned to BME as a "home school."

2

STUDENT ADMISSION PROCESS

2.1 TIMELINE

Applications are considered annually for enrollment in the fall term. In rare cases, an applicant may be considered for spring or summer. However, all prospective students should plan for fall consideration.

The deadline for submission of applications to all programs/majors with BME as a home department is December 1 each year. All application materials, including test scores and recommendation letters, are due by this date. Some of the interdisciplinary programs have other deadlines posted and accept master's applications, but BME will only consider doctoral applications and those must be received by December 1. Prospective students are strongly encouraged to apply well in advance of this deadline.

Applications are reviewed by the Graduate Admissions Committee generally between December and early March. Top applicants may be invited to campus for interviews and recruitment in March (see Campus Visits below).

Decisions are normally completed by early-March so that prospective students have time to consider other school offers and respond by the standard April 15 response deadline. Financial award details are included with admission decision letters.

2.2 REQUIREMENTS FOR CONSIDERATION

A student who will have completed a Bachelor of Science (BS) degree before potential enrollment may apply for the doctoral program. The program does not require that a student first earn a Master's degree. Applicants should have the following prerequisites:

- BS in engineering or life sciences
- One year (two semesters or three quarters) of calculus-based physics
- One year of organic chemistry (one semester is required; a full year is recommended)
- Calculus through and including differential equations (4 semesters total)

In addition to prior coursework and Grade Point Average (GPA), an applicant must submit a personal statement (as part of the actual application), Graduate Record Examination (GRE) scores, and letters of recommendation. Non-native English speakers should submit Test of English as a Foreign Language (TOEFL) scores. Prior research experience is not required, but is strongly preferred.

2.3 APPLICATION SUBMISSION

All interested students must apply through Georgia Tech's Graduate Admissions Office (<http://www.gradadmiss.gatech.edu/>). All applicants must submit an application with statement of purpose, three letters of recommendation, official transcripts from all colleges/universities attended, official GRE scores, and TOEFL scores (for non-native English speakers). The Graduate Admissions website provides details on how to submit application materials. International applicants should be sure to read the entire instructions for international admissions.

PKU Applications

Students admitted to the PKU program submit application paperwork for the secondary campus institution(s) in the year following their admission to the primary campus.

Beijing-based students must submit application materials through the Georgia Tech Graduate Admission system as described above. The deadline for submission of all information is December 1 of the first year of enrollment at PKU BME. Copies of this information will be forwarded to Emory's Graduate Admission by the BME Graduate Program Manager.

Atlanta-based students must submit the following information to Peking University. The deadline for submission of this information is December 14 in the first semester of enrollment. Clarification and assistance with the process will be provided by the PKU Program Coordinator.

1. Peking University Application Form for International Students (Master and PhD Programs). Submit the online application at <http://www.isd.pku.edu.cn/html/english/> or <http://www.studyatpku.com>, and then print a hard copy with passport-type photo affixed and mail to the PKU Program Coordinator.
2. Official transcripts from all colleges and universities previously attended.
3. Personal Statement (limit of 1500 words for doctoral programs). The format can be downloaded at <http://www.isd.pku.edu.cn>.
4. Two Recommendation Letters from professors or other academic personnel. The Graduate Program Manager can provide a copy of your original GT application with recommendation letters directly to the PKU Program Coordinator.

2.4 APPLICATION REVIEW

The Graduate Program Manager manages the application process in conjunction with the chair of the faculty Admissions Committee and the Associate Chair for Graduate Studies. The Manager retrieves all BME applications from the Graduate Admissions Office and facilitates the initial review process.

Application files are reviewed by the Admissions Committee, which is composed of faculty members. All aspects of the application are considered, including GPA, academic background, research experience, GRE scores, letters of recommendation, and personal statement. There is no quota for international or domestic students as the Admissions Committee seeks the best applicants, regardless of citizenship. The applicant pool is very competitive with the acceptance rate typically being less than 20%. Decisions are communicated in writing (not via phone or e-mail), but applicants may check on the receipt of their application materials online via the Graduate Admissions website.

2.5 CAMPUS VISITS

Admitted applicants are invited to a recruiting event in March. The Associate Chair for Graduate Studies and the Admission Committee determine which students are invited. Due to budget limitations, invitations are extended only to applicants residing in the US. During the event, students are given the opportunity to meet with faculty members in whom they are interested and current students. Presentations on curriculum and various research activities are given. Tours are provided of labs and facilities on both campuses. Travel, lodging, and meal expenses are covered or reimbursed for invited students. Details on allowable expenses are provided to invitees by the Graduate Program Manager.

2.6 DECISIONS

The Associate Chair for Graduate Studies and the directors of the associated degree programs use information from any or all of the following sources to make admission decisions for the department: the Graduate Program Manager, the Admissions Committee, and campus visits. Some admission decisions are made on a rolling basis. In order to maximize the opportunities to pursue other options for applicants considered less competitive, notification letters will be sent to those students as soon as possible. However, offers of admission are generally made only after the conclusion of campus visits. Written offers include admission and financial aid details.

2.7 INTERNATIONAL STUDENT PAPERWORK

The Georgia Tech Graduate Admission Office and BME Graduate Program Manager generate and send initial immigration documents (i.e., I-20 to new international students). Once paperwork has been initiated, the Georgia Tech Office of International Education serves as the primary source for information and assistance for international students.

2.8 STUDENT RESPONSES

The typical deadline for graduate admission student responses across the US is April 15. Students should be prepared to compare all offers of admission and financial assistance to make their final decision for enrollment by this date. Admission letters include an official student response form, which should be submitted to the Graduate Program Manager by this deadline.

Application materials for students who plan to enroll are forwarded to Emory University and Peking University, as appropriate for the chosen program, and are processed in those schools' systems. BME students are recognized with full student status at both Georgia Tech and Emory. PKU students are recognized with full student status at Georgia Tech, Emory, and Peking University.

2.9 MD/PHD ADMISSION PROCESS

Prospective students in the MD/PhD program initiate the application process through Emory's School of Medicine. A special committee, which includes a faculty member from BME, reviews the applications and those recommended for admission to are sent to the department's Admission Committee for final review.

Admitted MD/PhD students that expect to enroll in a BME program are welcome to attend seminars and other events prior to official enrollment (though no formal registration will occur). These students normally make final decisions on where to enroll for their PhD programs in the fall term of the second year of medical school and thus are encouraged to attend the department's new student orientation at the beginning of that term. If choosing a program in BME, they must complete the Georgia Tech application process and are typically admitted for the subsequent spring term while they complete lab rotations. The academic program officially begins in the *following* fall with the other newly admitted students.

3

NEW STUDENT INFORMATION

3.1 FINAL ADMISSION PAPERWORK

New students who have committed to enrolling (i.e., official student response forms sent to the Graduate Program Manager) must complete the admission process by submitting any and all final required paperwork to the Georgia Tech Graduate Admissions Office. Typically, this paperwork includes an updated, official transcript showing final grades in any outstanding coursework. A complete list of required documents will be sent to each student by the Graduate Admissions Office.

3.2 ORIENTATION

Typically offered in mid-August during the week before the fall term begins, all academic, financial and business matters pertinent to new graduate students are covered during orientation. In addition to department orientation, students must attend Institute-wide and University orientations at Georgia Tech and Emory University, respectively. Specifically, Georgia Tech hosts sessions sponsored by the Graduate Admissions Office and international student sessions sponsored by the Georgia Tech Office of International Education (OIE), and Emory University hosts a session sponsored by Laney Graduate School. Attendance at these sessions is critical, and students should plan to arrive on campus before orientation begins.

Institute Orientation

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. Georgia Tech's GradExpo features Georgia Tech campus services, student organizations, and local businesses that assist new students become familiar with campus life at GT and the surrounding community. Specific student business includes health/medical issues (e.g., health insurance and immunization requirements), obtaining a Social Security card, and payroll processing. Emory University also hosts orientation, with presentations by the Dean of Laney Graduate School and University offices and organizations. Students must attend all orientations relevant for their respective degree program.

New Hire Paperwork for Stipends

All new students on Graduate Research Assistantships, with the exception of those students enrolled in the MD/PhD program, complete Georgia Tech Office of Human Resources (OHR) hiring packets and meet with OHR representatives during the 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.

Department and Program Orientations

The Academic Office sponsors a department-specific orientation for all new BME graduate students, which is held the week prior to 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 prior to 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 also host separate orientations, and students participating in those program 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 prior to being admitted for lab rotations in the spring.

International Student Orientation

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 GT OIE orientation and pre-arrival information for accepted international students are found online at <http://www.oie.gatech.edu/iss/admissions/>.

English Language Assessment

Emory requires that all BME students, whose native language is not English, regardless of language of instruction or TOEFL score, complete an ESL (English as a Second Language) assessment. This testing is normally conducted in mid- August, and typically coincides with orientation week. The specific date and time of the assessment will be advertised to students by the Graduate Program Manager.

3.3 FACULTY ADVISOR ASSIGNMENTS

Faculty Interviews

The student-faculty advisor match is critical to success in a doctoral program. In addition to common research interests, a good match takes into account such factors as work-style, personality, and culture. To facilitate an appropriate match between a student and faculty

advisor, students are required to interview at least four faculty members at the start of the first term. Interviews should include in-depth discussions with faculty members in addition to lab observations (e.g., participation in lab group meetings, meetings with current students and/or postdocs, lab tours...etc.). By September 10 of the first year, each student must submit a ranked list of faculty advisor preferences to the Graduate Program Manager (BME students) or Academic Advisor (students in associated degree programs). Faculty members also 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, and current distribution of students among advisors. Once matched, the student and Advisor must each review and sign the BME Advisor-Graduate Student Financial Commitment, which lays out the responsibilities of each party upon entering this relationship. Please see BME Advisor-Graduate Student Financial Commitment form for more information on details of these responsibilities.

Optional Lab Rotations

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

Arrangements should be coordinated through the Graduate Program Manager. Students are typically paid at the regular stipend rate, prorated depending on the time period. These students are still expected to participate in 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 made in these cases varies.

Designated Offers of Admission

Students whose offers of admission designated specific faculty members have already been matched with their faculty advisors. Students with designated offers do not participate in the interview process or rotations.

4

FINANCES

This chapter is intended to offer the most pertinent information related to graduate program finances to students, faculty, and staff. These policies are applicable to all students in all majors. Complete details on institutional policies and procedures can be found via the various administrative, business, human resources, and finance departments. Links to the most relevant internet resources regarding the policies can be found in Appendix B.

4.1 FUNDING SOURCES

The department normally offers full funding to admitted students that include a stipend and coverage of tuition. Funding sources include departmental and institutional funds but are primarily from individual faculty members once student/faculty advisor assignments are made. Students are strongly encouraged to seek external funding and those that obtain partial funding normally receive supplemental funds from the faculty advisor (primarily) or department. Most non-resident students (i.e., those who are not legal residents of the State of Georgia) are offered a reduction in tuition via the waiver process described below. All students receive a monthly stipend intended to offset living expenses. The funding is designed to support students only and not their dependents.

Graduate Research Assistantships

In most research-oriented universities, the predominant means of support for graduate students is via graduate research or teaching assistantships. The research skills and knowledge developed through these assistantships often lead to a student's own thesis research.

Most new students in BMED are hired under the Graduate Research Assistantship (GRA) program. GRAs are generally intended to be funded through sponsored research of a faculty member. GRA students participate in research and typically perform the following activities: help conduct experiments, analyze data, research academic literature, write computer programs, and author papers and theses. GRAs are required to maintain full-time enrollment.

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 prior to 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 and Jones Awards. The Graduate Program Committee, 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.

Other Financial Aid

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

4.2 TUITION & FEES

Georgia Tech is a public university; 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.

Most BME students receive tuition waivers and then tuition is charged to the faculty advisors (see below). However, most students are typically still responsible for a small amount of tuition and the mandatory student fees. The exact amount is dictated by the type of funding and varies annually with any change in costs set by the BOR. For new students, an estimate of the out-of-pocket costs is included in the admission offer letter.

PKU students will continue with registration and financial arrangements via Georgia Tech as usual even when traveling to Beijing for the year of exchange research. Peking University will not charge any tuition or fees. For BME and PKU program students, any initial charges related to course registration shown in a student's OPUS account (Emory University

registration system) should be cleared by Laney Graduate School staff before the close of registration.

NOTE: Any subsequent changes that a student makes to his/her registration in OPUS must be reported directly to the Emory University Graduate School Registrar (see Appendix A for Administrative Staff) immediately so as to avoid being personally responsible for later charges. This includes the addition or removal of an actual course being switched with the BMED 9999R placeholder.

Tuition Waivers

Pursuant to the Graduate Student Tuition Remission Program (GSTRP) and Office of Scholarships & Financial Aid's Non-Resident Waiver Request process, most students receive some type of tuition waiver. Waivers are not guaranteed and are offered according to institutional and departmental policies and budgets. Further, they require re-nomination each semester. Students on fellowships that offer full tuition do not receive waivers.

Non-Resident tuition waivers reduce the amount of tuition owed to the Institute to Resident remission rates. Resident tuition waivers reduce the amount of tuition owed from standard to remission rates. Faculty member accounts are charged for the remission rates. Thus, students with waivers pay a nominal amount but tuition is being paid for them.

The Graduate Program Manager is responsible for entering GRA tuition waivers into the campus system and submitting nominations to the financial aid office for non-resident fellowship waiver requests.

NOTE: Waivers are processed only for students who update their Student Support Forms (see below) in a timely manner. Otherwise, students must be prepared to pay full tuition.

4.3 COST OF ATTENDANCE ESTIMATE

The Georgia Tech Office of Scholarships & Financial Aid provides an annual estimate of total costs of attendance that includes tuition and fees, books and supplies, standard housing allowance, standard meal allowance, and miscellaneous personal expenses. Current figures can be found via the financial aid website.

4.4 STIPENDS

Students are considered employees and must be hired by the department each term. After submitting the initial HR paperwork during orientation, students update their funding sources via the online Student Support Forms (see below) and work with the Finance Office for payroll matters. Stipends are paid monthly (last business day of the month) via direct deposit into student bank accounts. Stipends are taxable in accordance with US laws and thus standard withholdings are applied.

4.5 STUDENT SUPPORT FORMS DATABASE

BME Graduate Students

All students with BME as a home school, regardless of major/program or physical location, must complete an online Student Support Form each semester. This support form serves two critical functions. First, the information submitted by the student is used by the BME Finance Office to determine the appropriate stipend/payment. Second, the information is used by the Graduate Program Manager to determine whether a tuition waiver (and what type) is appropriate for the student. The form must be updated each term, even if the source of funding has not changed.

Any BME student who is paid via funds from another academic unit (e.g., BME student whose faculty advisor is in ME) must also complete a support form for the department from which she or he is paid. Details on the process should be obtained from that department.

Non-BME Graduate Students

All students who are paid by BME but belong to another department academically must also complete an online Student Support Form each semester. The form must be updated each term, even if the source of funding has not changed. Any applicable tuition waivers will be handled by the students' home school and not by BME. Students should complete support forms with their own departments as well.

Faculty Advisors

After students complete their support forms, the system sends them to the appropriate faculty advisors for the approval stage. Faculty members need to enter specific account numbers, dollar amounts, periods of support, and any comments needed.

Deadlines for Support Form Completion

Students and their faculty advisors (who must provide approval and specific account details) must complete support forms 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 fellowship tuition waiver requests.

Fall term – May 1

Spring term – October 1

Summer term – February 1

NOTE: Students must update support forms each term. Faculty members (or their designees) then approve and provide account details. Strict adherence to deadlines by both students and faculty members is required in order for stipends and any applicable tuition waivers to be processed.

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

Student Instructions for Completing the Support Form

- **Create an Account:** Prior to the first term of support, contact the BME webmaster at webmaster@bme.gatech.edu with a request for a new account. Include full name, GTID, home department, major, and full GT e-mail address (e.g., george.burdell@mail.gatech.edu). A temporary password will be assigned, which must be changed prior to submitting the first support form.

Log on to the online BME AdminPlus system

(<http://admissions.bme.gatech.edu/login.php>) using complete GT email address and password. For any technical problems with the system or forgotten passwords, please e-mail webmaster@bme.gatech.edu.

- **Declare Funding Period:** Update with **the current term** (e.g., Fall 2009).
- **Declare Advisor:** Ensure that the correct faculty member who provides financial support is listed.
- **Declare Status:** Enter the type of funding (**GA, GRA, Fellowship, or MD/PhD***) with the specific names of fellowships, if applicable. Please check with the Student Payroll Accountant in the Finance Office if unsure of funding type.
 - **Emory Lab Students** – Students who enrolled Fall 2014 or later, and are matched to a professor whose lab is located on the Emory campus, should choose this Status. This includes students who have an NSF Graduate Research Fellowship that is routed through Emory University – these students should choose Emory Lab Students under Status and choose NSF Graduate Research Fellowship under the drop-down for Fellowships (i.e., do not choose Fellowship under Status).
 - **MD/PhD** – Status for Emory MD/PhD students only. MD/PhD students from all other medical schools should choose GRA.
 - **Multiple fellowships:** List all received.
 - **Combination of Fellowship and GRA funding:** Choose GRA for the Status and include the name of all Fellowships in the appropriate drop-down fields.
 - **Options for Term of Planned Graduation:** BME students should consult with the Graduate Program Manager in the Academic Office about the various options before completing their support forms.
 - For those planning to use one of the alternate registration options (e.g., 1-credit hour) in conjunction with being hired as a GA, then indicate GA for Status. In this case, no tuition waiver will be applied.
 - For those planning to use an Enrollment Waiver for the last term, no support form is necessary.
- **Upload Forms:** Submit any necessary documents regarding the funding source using this field.
- **Review** all remaining fields and correct, if necessary. Click **Update** to submit.

Faculty Instructions for Completing the Support Form

- **Create an Account:** If an account has not already been set up, contact the BMED webmaster at webmaster@bme.gatech.edu with a request. Include full name, full GT e-mail address (e.g., george.burdell@mail.gatech.edu), and GTID. A temporary password will be assigned, which must be changed prior to submitting the first support form.

Log on to the online BME AdminPlus system (<http://admissions.bme.gatech.edu/login.php>) using complete GT email address and password. For any technical problems with the system or forgotten passwords, please e-mail webmaster@bme.gatech.edu.

- **Navigate to Faculty Review/Teaching Support/Students Supported** to find the list of students needing approval.
- **Enter specific Account Number, Dollar Amount, Period of Support,** and any **Comments** (e.g., subcontract information) for each student.
- Click **Update** to approve and submit each support form.

System Notifications

After the student portion is updated, the system will send the advisor a notification indicating that the support form is ready for approval. After the faculty advisor approval has been completed, the student will receive a confirmation e-mail. If no confirmation of this step has been received by the morning of the deadline, the student should contact the advisor immediately.

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. Upon approval by the Finance Office, the Academic Office will process any applicable tuition waivers. GRA and MD/PhD waivers are input directly into the campus system. Fellowship waiver requests are submitted to the GT Financial Aid Office. No waivers are given for GAs.

5

ROLES & RESPONSIBILITIES OF FACULTY & STUDENTS

5.1 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 processes 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 signature to various assignments indicating a pledge to uphold the honor code. Links to the complete honor codes of both institutions are found in Appendix B and a sample pledge is found in Appendix C.

5.2 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 by the advisor beyond the employment responsibility of obtaining resources to pay the student and allow him/her 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 his/her 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 also 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 his/her Advisor, and the Advisor to his/her 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 his/her tenure as a graduate student in the Advisor's lab. If a graduate student wishes to change advisors, he/she agrees to give the Advisor a minimum of one month's notice, with termination coinciding with the end of an academic term in order to maintain proper accounting for registration and payroll processes. The student is responsible for securing a new advisor and funding prior to leaving the existing Advisor's lab.

5.3 BME PROGRAM FACULTY MEMBERSHIP CRITERIA & APPLICATION PROCESS

Georgia Tech and Emory faculty with a primary appointment in a school other than BME may apply to join BME Graduate Program Faculty. Each member of the BME Graduate Program Faculty is expected to be involved in the teaching and advising responsibilities of the Program. This requirement can be met through a combination of activities to include: 1) teaching or co-teaching a course or module in a course listed as BME core or approved electives including courses cross-listed with BME, 2) service on student qualifying and thesis examination committees, and 3) participation in recruitment efforts. It is expected that each member of the BME Graduate Program Faculty will have adequate external research funding to support the stipends and research expenses of students under his/her supervision.

Admission to Program Faculty

Any tenure-track faculty member at Georgia Tech and any full time faculty member at Emory University who has a significant research focus in biomedical engineering may submit a request for admission to the BME Graduate Program Faculty. Each applicant must have a current BME faculty member serve as a sponsor for the application.

The request should include:

- 1) A letter addressed to the chairperson of the BME Graduate Committee, indicating the applicant's research area, his/her commitment to supporting students, and a statement as to how the applicant intends to satisfy the teaching requirement. The letter should include the contact information for the administrative support personnel who assist with various academic, financial, and other administrative concerns for this faculty member. The letter should include the name of the current BME Program Faculty member who will serve as a sponsor for this applicant. Finally, this letter should include support from the chairperson of the department in which the applicant holds his/her primary appointment.

- 2) A full CV and a two-page CV in either NIH or NSF format.

Applications should be submitted electronically to the BME Graduate Program Manager (gradstudies@bme.gatech.edu). Applications received by November 1 and May 1 are reviewed in the November and May graduate committee meetings, respectively. Upon recommendation from the BME Graduate Committee, the final decision on membership will be made by a vote of the current BME Faculty.

Once admitted, new program members are eligible to serve as primary advisors to BME students. Unless and until they are admitted, applicants may fund students under a co-advisement relationship, however a BME Program Faculty member must be the primary advisor of record. If not already a Georgia Tech faculty member, the department's Human Resources representative will contact the new member with institutional paperwork required for access and privileges at Georgia Tech.

Renewal of the Membership in the BME Graduate Program Faculty

Program Faculty are awarded a two-year term. At the end of the two-year term, Program Faculty members may apply for renewal. Faculty requiring renewal will be notified at least two months prior to the end of the two-year term. Faculty seeking renewal must submit a cover letter outlining program involvement and an updated CV. The renewal application is reviewed by the BME Graduate Program Committee in November and May and does not require a full faculty vote for approval.

5.4 GUIDELINES FOR WHEN A FACULTY MEMBER LEAVES GEORGIA TECH OR EMORY

If a faculty member leaves Georgia Tech or Emory such that s/he is severing the official relationship with the institution(s) and department, provisions must be made for the graduate students being advised. The determination of whether a student can or may remain in a program supported by the Wallace H. Coulter Department of Biomedical Engineering will be made according to the following guidelines. Consultation between the faculty member, student, Academic & Finance Offices, and GT Office of International Education (where applicable) should begin as early as possible in the process of the faculty member's potential decision to leave in order to protect all parties from academic, financial, and legal perspectives.

1. Assess the student's immigration status.
 - a. If the student is a US Citizen or Permanent Resident cardholder, proceed to Step 2.
 - b. If the student is under an international immigration status (not a US Citizen or Permanent Resident card holder), the Office of International Education must be consulted. In most cases, it will not be possible for the student to remain in a GT or Emory degree program and move with or remain under the advisor that is

leaving. Possible options include:

- i. The student may remain in the degree program (and in Atlanta) under a different advisor. Academic and financial arrangements must be changed.
 - ii. If the advisor is moving to another academic institution, the student may transfer into the new institution's degree program and move with the advisor. This option must be approved by the other institution.
 - iii. If the advisor is moving to a non-academic institution, the student could explore the option of working as a non-student under some other immigration status.
2. Assess the student's academic progress and determine where the student wishes to be physically located after the advisor leaves.
 - a. Determine whether or not the student has successfully defended a research proposal and been admitted to PhD candidacy.
 - b. Determine whether or not the student plans to move to the new location to remain physically in the advisor's new lab.
 3. For a student who has NOT yet successfully defended a research proposal and been admitted to PhD candidacy:
 - a. If the student wishes to remain in a BME program and stay in Atlanta, the student must be reassigned to another advisor at GT or Emory. The new advisor must be appropriate for the student's research and program.
 - b. If the student wishes to move with the advisor whose lab is moving the lab to a non-academic institution (e.g., a hospital), it is not possible to remain in the BME program under that advisor. Thus, the student may either leave the program or remain in Atlanta and be reassigned to another advisor at GT or Emory. The new advisor must be appropriate for the student's research and program.
 - c. If the student wishes to move with the advisor whose lab will be located at another academic institution, the student must transfer to a degree program at the new institution. Admission to that institution may not be guaranteed; therefore the advisor should discuss and negotiate student admission and placement with the new institution.
 4. For a student who HAS successfully defended a research proposal and been admitted to PhD candidacy:
 - a. If the student wishes to remain in a BME program and stay in Atlanta, then an appropriate co-advisor for the student's research and program must be secured. The co-advisor must assume both academic and financial responsibility for the student. The original advisor and new co-advisor should determine the arrangements for transfer of funds as necessary.
 - b. If the student wishes to obtain a BME degree (GT or GT/Emory) but move with the advisor whose lab will be located at another academic institution or at a non-academic institution:
 - i. An appropriate co-advisor for the student's research and program must be secured.
 - ii. For financial purposes, the student can no longer be hired through GT or Emory. Thus, neither tuition remission nor tuition waivers can be granted. The student must register for a minimum of 3-credit hours of doctoral thesis hours each term until graduation and directly pay tuition and fees personally. Since BME guarantees a minimum stipend and coverage of

tuition to all admitted students, a contract between the department and advisor should be drawn indicating that these commitments will be fulfilled by the advisor. The advisor should make arrangements with the new institution for stipend payments and reimbursement of tuition (students typically are responsible for their own fees).

5.5 STUDENT PERFORMANCE POLICY

Graduate students are expected to make sufficient progress towards degree completion in order 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.

Academic Performance

Georgia Tech and Laney Graduate School at Emory have 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

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 receive no failing grades;
- Must reduce the number of incompletes on her/his/their record to one; and
- 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 International Student and Scholar Services.

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 of reinstatement to good standing.

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 graduate program administrators 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 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 term. The PIP must be signed by both student and faculty advisor and submitted to the graduate program administrators.

In the event that a student fails to meet agreed upon goals and/or timelines by the completion of the semester term 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 successive semester terms, a faculty advisor may decide to dismiss the student from the lab. Only students who have earned a grade of 'U' for thesis hours for two successive terms may be dismissed from a 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 exception to this policy must be made directly with the Associate Chair for Graduate Studies (see Student Petitions).

Dismissal

A student who is dismissed from the program should participate in exit interviews 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.

Readmission

A graduate student who is dismissed by the department or either 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 starting with the Georgia Tech Registrar's Office.

Rights and 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.

5.6 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. All members of the BME community are expected to contribute to this effort by adhering to all requests and processes in a timely manner.

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. The 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 to which 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.

5.7 STUDENT PETITIONS

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 for 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 framework of the GT/Emory BME administrative structure, the Associate Chair will forward the grievance to the Office of the Vice Provost for Graduate Education & Faculty Affairs 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 Vice Provost for Graduate Education & Faculty Affairs at Georgia Tech or the Senior Associate Dean of the Laney Graduate School.

6

BUSINESS POLICIES

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 is found in Appendix A. Links for the websites of departments mentioned are found in Appendix B.

6.1 BUILDING ACCESS

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

6.2 COMPUTER ACCESS & USAGE

All new students are assigned network and e-mail accounts by Georgia Tech. All BME students are also assigned accounts by Emory. As students are required to check official e-mail regularly, it is suggested that BME students have all mail forwarded to one account or the other. See the Campus & Building Resources section of Appendix B for links to the Information Technology departments for both institutions. 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.

6.3 COPIES

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 outside the labs are located in UAW in the 2nd Floor Mailroom and in the 3rd Floor lounge area. At Emory, a copier is available in the BME office on the second floor of HSRB.

6.4 DESK/OFFICE SPACE

Desk or office space is available for most full-time graduate students. Assignments are made by the BME Administrative Staff.

6.5 FAX MACHINES

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

6.6 HEALTH INSURANCE

Students are required to show proof of health insurance in order to enroll in the program. Students without independent health insurance (e.g., parent/family policy) must enroll in one of the two institutions' plans. Typically, students choose the Georgia Tech health insurance plan. Students must follow the insurance waiver process at the school for which they do not enroll or at both schools if independent health insurance is used.

Details on the Georgia Tech health insurance plan are available via the Health Services office with most students being required to enroll in the "Mandatory" plan. Students are responsible for payment of Georgia Tech health insurance via the tuition and fees process. The GRA stipend offered with admission is intended to help offset this cost along with other living expenses.

NOTE: MD/PhD students must enroll in Emory health insurance unless otherwise covered by an independent policy. Also, some students receiving fellowships may not be eligible for payment of health insurance costs depending on the terms of their fellowships.

6.7 IMMUNIZATION RECORDS

Students whose primary institution of record is Georgia Tech are required to show proof of immunization. The Health Services department is responsible for collecting this information and places registration holds on all students until the requirement is fulfilled. Particular forms are required and are available from the Health Services department.

6.8 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 Graduate Admission Office and BME Graduate

Program Manager work together to produce and send initial immigration documents (such as the I-20) to new international students. The Georgia Tech OIE is the primary source for information and assistance for international students. Students may occasionally need departmental documentation of current academic status for travel purposes and this may be obtained from the Graduate Program Manager.

6.9 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 may 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.

6.10 NAME CHANGES

Students who legally change their names after enrollment, such as in the case of marriage, must notify all appropriate departments at both schools of the change. For the Department, students should contact the Graduate Program Manager. For the institutions, students should contact the Registrar and Human Resources offices at both schools.

6.11 PARKING

BME program students may have parking privileges on both campuses by paying only one annual parking fee at Georgia Tech. BIOE students who are assigned to advisors at Emory may also have these privileges. Registration and payment for Georgia Tech parking must be completed online at www.pts.gatech.edu. The Administrative Staff at Georgia Tech provides a list of students to Emory pursuant to the inter-campus agreement (see Appendix B for a link to the details). Afterwards, students may pick up Emory parking permits at the Emory Parking Office.

6.12 PHONES

Telephones are available on each campus for official business only.

6.13 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. Purchases of \$1500 or more and of 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.

6.14 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.

6.15 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 BME homepage:

<https://www.bme.gatech.edu>.

6.16 SAFETY GUIDELINES

All BME personnel with laboratory access 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 prior to the start of the fall term and are arranged by the Georgia Tech Office of Organizational Development.

6.17 SHUTTLE SERVICE 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 are found online via the Parking & Transportation website: <https://pts.gatech.edu/other-shuttles>.

6.18 STUDENT IDENTIFICATION CARDS

BME program students may obtain student identification cards from both institutions. The BuzzCard (Georgia Tech) and EmoryCard (Emory) provide official identification, building access, and the ability to pay for services such as copies, dining, and entertainment. Instructions for obtaining a BuzzCard or EmoryCard are found online via links in Appendix B.

6.19 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 and institutional resources such as the BME Student Travel Funds and the Georgia Tech Graduate Conference Fund. Details on applying for travel award funds are found on the Academic Office website (see Appendix B).

The primary resource for a student regarding travel is the faculty advisor who will guide the student on 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.

6.20 VACATION

Graduate students are considered temporary employees of Georgia Tech and thus 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 and the ten days of official institutional administrative holidays during each 12-month period of residency. Semester breaks and periods between terms are not automatic vacation days. Vacation and any special (unpaid) leaves must be approved well in advance by the faculty advisor.

7

CURRICULUM & TRAINING

7.1 BME PhD PROGRAM OVERVIEW

The BME 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 BME-PKU program curriculum is modeled after the BME program curriculum and has additional requirements including a year of residency at the secondary campus. The curriculum will facilitate individual flexibility and depth of study through coursework selected by the student and thesis advisor. The below table provides an overview of the BME curriculum by category and hours required. The sections following outline specific course and training requirements in more detail.

Description	Requirement
Integrative Engineering-Biomedical Science BME Problem-Based Course (3 options)	One, 3-hour course
Bioscience and Engineering Courses	5-7 courses (21 hours total) <ul style="list-style-type: none">• 1 bioscience course• 1 engineering course• 3-5 research-specific electives
Advanced Graduate Seminar Course	One, 3-hour topical discussion-format course
Ethics, Teaching, and Professional Developing Training Courses	Three, 1-hour courses
Seminar Attendance	7 seminars per semester; four semesters

7.2 BIOSCIENCE AND ENGINEERING TRAINING

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 (i.e., “engineer” and “bioscientist”) and focus on a particular topic area. 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 her/his interests, and he/she should complete the course in the first year in the program prior to taking the qualifying exam.

Bioscience/Engineering Fundamentals (Course numbers vary)

Engineering/bioscience fundamental courses focus on fundamental knowledge in engineering, in bioscience, and at the intersection of the two. These courses may be offered by the Wallace H. Coulter Department of Biomedical Engineering or by other units at Georgia Tech and Emory. Students must complete 21 semester hours in this category, with a minimum of one engineering course and one bioscience course. The overall balance of engineering and bioscience courses is determined by the student and his/her advisor and should factor the student’s prior knowledge and research. Courses must be documented on the Program of Study form and must be approved by the Graduate Program Committee.

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.

7.3 ETHICS TRAINING

Online Training

All students are required to complete online RCR training within the first 90 days of enrollment. This training is offered through the Collaborative Institutional Training Initiative (CITI).

Jones Program of Ethics (JPE 600, 610)

Emory’s Laney Graduate School requires that all BME students complete JPE 600 and 610. JPE 600 is a one-day session at Emory University prior to 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 attend four sessions, and approved sessions may be offered at Georgia Tech or Emory. Confirmation of course completion of both courses is recorded on the student's Emory transcript and is required for graduation.

Program-Specific Courses (BMED 7004, Integrative Core, Advanced Graduate Seminar)

BME graduate students must complete the ethics training module in BMED 7004 Teaching and Research Practicum I, which 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.

All students in interdisciplinary programs may submit a transcript record of a Georgia Tech-approved RCR training course to the Director of Graduate Training to waive the requirement of completing the ethics training module of BMED 7004.

Integrative Core and Advanced Seminar courses include 1.5 hours each of in-person RCR training in appropriate topic areas for a total of three additional hours of RCR training. This is required only of BME students.

7.4 PROFESSIONAL DEVELOPMENT TRAINING

TATTO (Emory) or TA Orientation (Georgia Tech)

All BME students must complete TATT 600, a 2-day workshop just prior to the start of the Fall term. All BME students with only a Georgia Tech affiliation (i.e., interdisciplinary program students) must attend Georgia Tech's TA Orientation.

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

BME 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. 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 in order for the students to receive a Satisfactory (S) grade in the BMED 7001 course. 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 terms as TA, respectively. This series of classes provides students with instructional and application-oriented teaching training, as well as provide information relevant to academic life. In addition, BMED 7005 Teaching & Research Practicum II course contains a professional development training module, which provides, training in the areas of mentorship, project management, career exploration, and communications.

Teaching Assistantship

Teaching is considered an integral part of the educational experience and is a requirement of the program. Doctoral students serve as a Teaching Assistant (TA) for two semesters, whereas master's students serve as a TA for one semester. The Director of Graduate Training finalizes TA assignments during the semester prior to 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. Roles and Responsibilities of a TA can be found in Appendix E.

7.5 THESIS HOURS

All students must enroll in a Master's Thesis (BMED 7000) or Doctoral Thesis (BMED 9000) section with their faculty advisor listed as the instructor of record. 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).

7.6 SECONDARY INSTITUTION PLACEHOLDERS

Emory (BMED 599R, 799R, or 9999R)

Atlanta students who are based in Emory labs must use BMED 599R (before PhD candidacy) or 799R (after PhD candidacy) each term as the variable hours course to ensure a total of 9 credit hours. In order to keep student status active at Emory, students from Georgia Tech and PKU labs must register for the BMED 9999R placeholder course every semester when not taking for-credit courses at Emory.

Georgia Tech Placeholder (BMEJ 9999A)

Beijing-based PKU students must register for the BMEJ 9999A placeholder course every semester when not taking for-credit courses at Georgia Tech.

MD/PhD Placeholder (BMEM 6001)

New MD/PhD students should use the Georgia Tech placeholder of 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. Afterward, they should register for actual courses and the individual advisor's thesis hours section (BMED 9000). They should also register for BMED 9000 on the Emory side.

7.7 MASTER'S DEGREE PROGRAM

All students in BME are admitted to programs with the expectation of completing doctoral degrees. Under special circumstances and with the approval of the faculty advisor and Associate Chair for Graduate Studies, a student may opt to complete a master's degree. Completion of all requisite coursework, appropriate research, a thesis, and thesis defense are

required. A student who completes a BME Master's degree must apply for readmission to pursue a BME doctoral degree. Reapplication does not guarantee readmission, and decisions are determined by the BME Graduate Admission Committee.

7.8 PKU PROGRAM

Students enrolled in the PKU program are subject to language and ethics training requirements that differ from those outlined for BME students. All policies are approved by a joint Atlanta-Beijing PKU Graduate Committee. Questions may be directed to the Director of the PKU program.

Language Requirement

PKU students who matriculate first on the Beijing campus must demonstrate English proficiency via the TOEFL requirement during the admission process. PKU students who matriculate first on the Atlanta campus must complete the Chinese language requirement by completing the Georgia Tech CHIN 1001 course by end of second year with a minimum grade of B. PKU students are encouraged to take further CHIN courses to improve Chinese proficiency. Students may exempt the course requirement by contacting the Georgia Tech Modern Languages department for an assessment early in the first term of enrollment. Results of the assessment will be sent via e-mail to the Graduate Program Manager. All course(s) (exempt or for-credit) must be noted on the Program of Study.

Ethics Series

Students that matriculate first on the Beijing campus must complete the JPE 600, JPE 610, the ethics training module of BMED 7004, and ethics training within the integrative core and advanced seminar courses upon enrollment at the Atlanta campus.

7.9 ASSOCIATED DEGREE PROGRAMS

Interdisciplinary Programs

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

MD/PhD 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. 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.

8

REGISTRATION

8.1 BME PhD PROGRAM

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).

BMED Courses

Students in the BME program have full student status at both institutions and therefore may register for courses at each school. Registration for all BMED course is completed via the Georgia Tech OSCAR system. To maintain active student status at the secondary institutions, students must register for the appropriate placeholder courses described in Chapter 7.

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.

Non-BMED Courses

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

Course Load Expectations

All students are expected to maintain full-time status 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 (GRAs) and/or Fellowships and ensure proper payments. See Chapter 5 for more information on finances.

During the semester in which a student plans to graduate, there are modifications to course loads and payment. Students should consult with both the faculty advisor and Graduate

Program Manager—in accordance with the Guidelines for Registration & Payment in the Term of Graduation in Chapter 9—prior to registration and payment deadlines.

Registration Calendars & Deadlines

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

Improper Registration or Failure to Register

The Registrar's Office is strict with regards to registration deadlines and fee payment. Late fees and problems 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.

8.2 MASTER'S PROGRAM

With the following exceptions, master's students must complete and therefore register for the same coursework as doctoral students.

Teaching Training

Master's students are required to complete one semester of teaching training and TA responsibilities.

Thesis Hours

Master's students must carry the same total course load each term as doctoral students, but must register for BMED 7000 Master's Thesis hours (versus BMED 9000 Doctoral Thesis).

8.3 ASSOCIATED DEGREE PROGRAMS

Students in interdisciplinary degree programs (BIOE, BINF, CSE, ML, ROBO) are considered Georgia Tech students only and thus use OSCAR for registration. Students interested in non-BMED courses at Emory must apply through the cross-registration program (Atlanta Regional Council for Higher Education or 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.

MD/PhD Students in the BME Program

Students in the MD/PhD program that have chosen BME as a major are considered joint students and thus have privileges at both institutions. Emory is the primary school for these students.

MD/PhD students should register directly in both schools' systems (Emory-OPUS and Georgia Tech - OSCAR) for the desired actual courses at each school. Upon first enrollment at Georgia Tech for lab rotations, students should register for BMEM 6001 in OSCAR (16

hours in summer, 21 hours in fall and spring) and for BMED 9000 in OPUS. Once matched with the advisor, a student should register in OSCAR for any actual Georgia Tech courses using the section of BMED 9000 for the particular advisor as the variable hours course in each system to meet the minimum total hours (Georgia Tech-16 in summer or 21-fall/spring) and for the one general section of BMED 9000 in OSCAR. The MD/PhD program may require other courses on the Emory side and that program's office should be consulted for details.

8.4 INTERNATIONAL STUDENTS

US immigration rules dictate various enrollment options for international students. To ensure that international students never fall "out of status" in terms of 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.

9

PROGRAM MILESTONES

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 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 science, engineering, and mathematics (see Chapter 6 for curriculum details); passing a comprehensive qualifying examination; and completion of a doctoral thesis/dissertation with oral defense in accordance with Institute policies. Each student must also complete an academic minor.

This section outlines the major steps or milestones that each student must complete in order to progress towards completing a degree. Official forms are associated with most of the milestones. See Appendix C for sample forms required for completing the milestones.

9.1 STUDENT/ADVISOR MATCHING

For all students who were not designated 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 a 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 their lists of 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.

9.2 PROGRAM OF STUDY

The Program of Study Form is due by November 1 of Year 1 in the program. After consulting with his/her thesis advisor, and considering expertise required for the chosen research area, the student must complete the form. Students must declare for each requirement of the curriculum the specific courses and term for which he/she will register. Forms must be submitted electronically to gradstudies@bme.gatech.edu. The Graduate Program Committee reviews each student's form and students receive notification of approval or required changes via e-mail.

Students in the PKU program must complete the Chinese language assessment (see Chapter 6 for details) in the first semester prior to submitting the proposed Program of Study.

9.3 QUALIFYING EXAM

The qualifying exam contains both a written and oral portion. The written exam must be submitted to the committee three weeks prior to the oral exam. The oral exam must be completed August 1 to November 1 in the second year of the program. Students must have a minimum cumulative GPA of 3.0 in order to take the exams. All details are found in subsequent sections.

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 and engineering 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 is very important.

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 bioengineering. A faculty member who is new to the program will observe an oral exam prior to evaluating an oral exam. The graduate committee makes final committee member and chair selections.

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.

Student Forms and Committee Member Preferences

Each student must submit a signed copy of the Academic Profile and Honor Code Pledge by April 1. In addition to providing a description of 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 member and chair assignments and cannot guarantee that student preferences will be honored. Committee assignments will be announced no later than June.

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 has been agreed upon by the student and all committee members, the student must notify the Graduate Program Manager.

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 may 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 provide guidance in developing the scope of the project and identifying relevant literature, however he/she is not allowed to provide specific feedback on the written document. The written exam must be submitted to the chair of the qualifying exam committee via email three weeks prior to the scheduled oral exam.

In the event that the written examination is not received within three weeks of the oral exam, the committee chair must notify the Academic Program Manager and the exam must be rescheduled for a later date, no later than November 1. The committee chair must contact the Graduate Program Manager in the event that 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.

Oral Exam

The oral portion of the qualifying exam will be a 60-90 minutes period, whereby each exam committee member has the opportunity to ask fundamental bioscience and engineering 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. He/she should confirm questions from committee members prior to the start of the oral 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 received 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 is not 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., rationale for a delay in the oral exam) to the chair's attention before the exam begins. Once an oral exam is in progress, the student's performance must be evaluated.

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 individual committee member using the Milestones Evaluation Rubric (see Appendix). 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 prior to the exam committee's adjournment.

The chair must complete a Qualifying Exam Decision Form with appropriate comments and should collect Milestones Evaluation Forms from each committee member prior to the committee's adjournment. The chair should deliver evaluations to the Graduate Program Manager. Exam results, factoring both the written and oral portions of the exam are as follows:

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.

Recommendations and Conditions:

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 Graduate Program Manager will be responsible for tracking 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.

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 (see note below) on the Decision Form and via a supplemental memo to the Associate Chair for Graduate Studies, if desired. In most cases, the same committee will administer the retaking of the exam and will do so within 3 months.

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 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, the student may elect to complete a terminal thesis-based Master's degree or be withdrawn from the program

Notification and Documentation of Results

Students and their faculty advisors will be notified of the exam results in writing via 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 Associate Chair for Graduate Studies, exam committee chair, and thesis advisor to discuss the results and make appropriate plans for the student's next steps.

9.4 THESIS COMMITTEE APPROVAL

Students must submit a list of proposed thesis committee members no later than March 15 of their fourth year, according to Laney Graduate School guidelines. Students should contact their proposed committee members for their individual approvals prior to submitting the Request for Approval of Thesis Committee Form. The form must then be completed by the student, signed by the faculty advisor, and submitted to the Graduate Program Manager for review by the Graduate Committee. The list of proposed members must be accompanied by a short justification of committee makeup and short-version Curriculum Vitae of 2- 3 pages (such as the NIH Biosketch format) for all members requiring justification (see below). After approval is obtained by the Graduate Committee, the form is kept in the student's file in the Academic Office.

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 BME Primary nor Program Faculty member--and will preferably be from a biosciences area of Georgia Tech, Emory, or a collaborating institution. The fifth member may be BME Program Faculty or have no affiliation with BME.

In the event that a committee member outside of Georgia Tech or Emory University is selected, the Associate Chair for Graduate Studies will write a request to seek approval from the Dean of Laney Graduate School. The request should include the proposed member's recent CV and a memo explaining how this member will contribute to the student's committee. The request should be submitted by the student as part of the Dissertation Committee Approval Form. In addition, members of the Georgia Tech and Emory communities who are not faculty but who possess expertise relevant to the dissertation project may serve on the committee with the approval of the student's program and the Dean. This request should be submitted to the Dean in a similar fashion as requests for scholars located at other institutions.

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, with the exception of the committee for a BME-PKU student. All thesis committee members should be active faculty or medical doctors with academic research and supervision experience. Industry professionals may be suitable, but are subject to approvals previously outlined. There should be a balance between "engineers" and "bioscientists" on the thesis committee.

Changes to the Thesis Committee

If the membership of a dissertation committee needs to change, students should submit a

change of Dissertation Committee Form (Emory) and Admission to Candidacy Form (Georgia Tech) as soon as possible. When a student submits a completed dissertation, the membership of the dissertation committee must match the members listed on the most recent Dissertation Committee Form submitted and approved by the Laney Graduate School and the most recent Admission to Candidacy Form submitted and approved by Georgia Tech.

9.5 RESEARCH PROPOSAL

After forming the thesis committee and by March 15 of the student's fourth year, 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 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 reveal that 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. The format of the written proposal can be found in the Appendix.

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 Academic Project Advisor 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 prior to the presentation.

Announcing the Research Proposal

Students must submit the details of the proposal presentation (date, time, location, committee members, title, and abstract) to the Graduate Program Manager via e-mail, at least two weeks prior to the scheduled presentation. The subject line of the e-mail should read "PhD Proposal Presentation: (Student Name)." The Manager will distribute an announcement inviting the department to the proposal.

Evaluating the Research Proposal

Students must ensure that each thesis committee members completes a BME Milestones Evaluation Form for his/her proposal. All completed and signed rubrics must be given to the Graduate Program Manager after the proposal. Admission to PhD candidacy will not be approved until these rubrics are submitted.

9.6 ADMISSION TO CANDIDACY

Following successful completion of the research proposal, a student must petition for admission to doctoral candidacy. This is done via the Georgia Tech Request for Admission to

PhD Candidacy Form, which includes information about the thesis topic, verification of passing the qualifying exam, and signatures of all thesis committee members and the Associate Chair for Graduate Studies or Department Chair. A copy of this form is sent by the Graduate Program Manager to Emory in lieu of the Emory Application for Admission to Candidacy.

NOTE: All Committee member signatures must be on one form. Students should email the blank form to members who live in other cities, to be signed, scanned and emailed back to the student prior to his or her presentation. If a Committee member is merely out of town during the time of the presentation, the student may not submit the form until that Committee member has signed.

9.7 PKU BME PROJECT INITIATION FORM

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. See Appendix C for a sample form.

9.8 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/Bioscience Fundamentals category. A specific form available from the Georgia Tech Graduate Studies & Research office is required to document the minor. This form must be completed and submitted to the Graduate Program Manager who will forward it to the Graduate Studies office on the student's behalf (normally near the end of the program during the degree paperwork completion process).

9.9 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 per year between proposal and defense.

9.10 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 the student's OPUS account or by paper form (found in Appendix C). Deadlines vary between the two schools and the Georgia Tech deadline always falls in the term that precedes the planned term of graduation. Thus, students must 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 may submit a “Reactivation” degree applications to Georgia Tech for a future term. A new Emory degree application for the new planned term of graduation must also be submitted. Students should consider the options for registration and payment during the planned term of graduation at this stage. See the Guidelines for Registration and Payment in the Term of Graduation in Chapter 9 for details.

9.11 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 thesis committee. Careful attention must be paid to the institutional deadlines for thesis submission. The defense should be scheduled no later than one month prior to the submission deadline in order to leave ample time for edits required by the thesis committee.

Format of the Thesis

Georgia Tech maintains a Thesis Manual via the Graduate Studies & Research Office website, which includes two important sections: “What You Have to Do to Graduate” and “Document and Format Guidelines.” The website also includes Forms and Deadlines sections. BME students should follow all Georgia Tech guidelines for creating and submitting their theses. Copies of the final draft of a thesis must be submitted to Emory after final approval from Georgia Tech.

Requirements for Defense

In addition to determining with the faculty advisor that the student is ready to complete and defend the thesis, a student must submit the applications for 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 Chapter 9 for registration options for the last term of the program.)

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 with the assistance of the Academic Project Advisor for Georgia Tech locations and the Emory Administrative Assistant for Emory locations. The student should submit a copy of the preliminary draft of the thesis to all committee members at least two weeks prior to the defense presentation.

Announcing the Defense

Students must submit the details of the defense presentation (i.e., date, time, location, committee members, title, and abstract) to the Graduate Program Manager via e-mail, at least two weeks prior to the scheduled presentation. The subject line of the e-mail should

read “PhD Defense: (Student Name).” The Manager will distribute an announcement inviting the department to the proposal.

Forms Needed for the Defense

Students should prepare the following forms/documents to take to the defense presentation: BME Milestones Evaluation Forms (completion of degree will not be approved until these rubrics are submitted), Georgia Tech Certificate of Thesis Approval for Doctoral Students, Emory Report of Completion of Requirements for Doctoral Degree, and one copy of the Emory Dissertation Approval Form that serves as the cover sheet for the final draft of the thesis. All forms are available via the Georgia Tech Graduate Studies & Research and Emory Graduate School websites.

NOTE: All Committee member signatures must be on one form. Students should email the blank form to members who live in other cities, to be signed, scanned and emailed back to the student prior to his or her presentation. If a Committee member is out of town during the time of the presentation, the student may not submit the form until that Committee member has signed.

Students should submit the Georgia Tech Certificate of Thesis Approval and Emory Report of Completion of Requirements to the Graduate Program Manager as soon as all committee member and advisor signatures are obtained. The Graduate Program Manager will obtain departmental approval.

Degree Completion Steps & Final Paperwork for Graduation

Students are expected to complete their dissertations and apply for their degrees within six years, as per Laney Graduate School guidelines. If a student has not completed the degree at the end of the seventh year, the program may grant a one-year extension. The program must submit notice of this extension to the Dean of the Laney Graduate School, no later than August 1 of the seventh year (before the eighth year). 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 will be responsible for some tuition

If a student has not completed the degree at the end of the eighth year, the student may continue work for at most one additional academic year and only with approval from the Dean of the Laney Graduate School. To obtain approval, the program must submit a request to the Dean no later than August 1 of the eighth year (before the ninth year). 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, at its option, 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 from his/her program, or who exhausts the extension granted without completing requirements for the degree, will no longer be

considered a degree candidate. No request for an additional extension of time will be considered except by application to the Dean of the Laney Graduate School, and none will be granted except in extraordinary circumstances. A student on an extension may not request a leave of absence.

9.12 PKU PROGRAM TRAVEL TO SECONDARY CAMPUS

Students in the PKU program generally follow the same curriculum and milestones as the BME program 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 at least one year. The timing is generally expected in the third year of the program after coursework is completed and qualifying exams are passed. But the ultimate decision should be made between students and advisors/co-advisors as appropriate to the progress of the research.

Students must plan their departure and return timetables to coincide with Georgia Tech official semesters due to the administrative processes involved (including finances, registration, and immigration support). Students may request a non-continuous year of residency at the secondary campus with 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).

Atlanta Students Traveling to Beijing

Students planning to travel from Atlanta to Beijing for their year abroad must prepare to obtain a Chinese “X” visa. Ensuring that the student’s home-country passport is current is of vital priority. A JW202 form must be obtained by 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 supplement for use in obtaining the visa from a Chinese consulate or embassy. The department’s PKU Program Support person will assist with this part of the process.

On the US side, the Georgia Tech OIE is the main 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 Graduate Program Manager (who will forward to the OIE)—at least several months in advance of planned travel. Students should also consult all other resources on the OIE website (www.oie.gatech.edu) for study abroad students related to tips on items such as insurance, immunizations, cultural differences, etc.

Orientation information for international students (in this case, non-Chinese) arriving at PKU is found [HERE](#). This site also provides resources on topics such as insurance, housing, and finances while in China. For Atlanta students who are not US Citizens or Permanent Resident cardholders, they should consult with OIE about additional issues

related to US immigration status.

Financially, Atlanta students will follow most of the same processes as when in residence in Atlanta. When using Coulter or other fellowship funds that are partial, a GRA supplement will be required. Thus, students in that situation should choose GRA as Current Status on the support form and the appropriate fellowship from the drop-down list of fellowship options. Students will pay GRA tuition & fees and be paid via the BME Finance Office/Georgia Tech payroll as when in Atlanta. Students with full fellowships should choose Fellowship and will be handled the same as when in Atlanta also.

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 need 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 in order to obtain a 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.

Beijing Students Traveling to Atlanta

Students planning to travel from Beijing to Atlanta for their year abroad must obtain documentation of funding that will cover the published rates by Georgia Tech of what

international students require (exact US dollar amount less the tuition and fees since none will be charged by Georgia Tech or Emory). Often, students receive Chinese Scholarship Council (CSC) funds that are supplemented by Coulter funds. These two documents – the CSC award letter and a PKU program letter generated by the PKU Program Director regarding the supplemental funds – or some other official proof of sufficient funds must be submitted to the Atlanta Graduate Program Manager who will work with the Georgia Tech OIE to obtain a DS-2019 form for use in the student requesting a “J-1” visa from a US consulate or embassy.

The OIE website (<http://oie.gatech.edu>) provides resources on various topics pertinent to living in the US such as housing, finances, and insurance.

All F-1 and J-1 students are required to have supplemental health insurance via Georgia Tech while in the US and PKU Beijing students will be required to pay this charge on their GT accounts. All international students will be enrolled in the BlueCross/Blue Shield (BCBS) student health insurance plan mandated by the University System of Georgia. The Graduate Program Manager will enter a code into the Georgia Tech system that will waive all other tuition and fees.

Since Coulter funds for Beijing students’ time in Atlanta is limited to one year, any additional time over one year must be covered financially by the Atlanta- based co-advisor. In any case, students should continue to choose PKU-Beijing for the 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>

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.

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
- a) Proof of Immunizations required by Georgia Tech

9.13 MASTER'S STUDENTS

With the following exceptions, master's students must complete the same processes and program milestones as doctoral students. See the checklist in Appendix F for a complete list of required paperwork.

Thesis Committee Approval

The thesis committee for a master's student must consist of at least three members, including the advisor. Two members must be on the BMED Program Faculty and one member must have no affiliation with the department. All other rules for committee makeup and approval are the same as for doctoral students (see corresponding section earlier in this chapter).

Research Proposal

While Master's students are required to prepare a proposal for the thesis committee; they are not required to make a formal proposal presentation.

Admission to Candidacy

In lieu of the Request for Admission to PhD Candidacy Form, Master's students must submit the Request for Approval of Master's Thesis Topic Form. This form must be submitted to the Graduate Program Manager immediately after the thesis committee has approved the student's research proposal. The Manager will obtain departmental approval and submit the form to the Graduate Studies office on the student's behalf.

Minor Form

Master's students are not required to complete a minor and thus this form is not required.

Thesis Approval Form

There are distinct approval forms for master's students. The Georgia Tech form is the Certificate of Thesis Approval for Master Students and the Emory form is the Report of Completion of Requirements for Master's Degree. Several of the doctoral thesis submission related forms (e.g., Library & UMI Information) are not required for master's students.

9.14 ASSOCIATED DEGREE PROGRAMS

As the associated degree programs (BIOE, BINF, CSE, ML, ROBO) are interdisciplinary and have their own 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 in which they participate.

10

DEGREE COMPLETION & GRADUATION

10.1 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 and consult with 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 (i.e., not by the reactivation petition deadline), which occurs in the term prior to 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.

Option 1: In School Entire Term

A student who will work in the lab the entire term in addition to defending his/her thesis and submitting all required paperwork by the Institute's normal deadline for graduation in that term 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 are not for students on Fellowships. Those students should only use Option 1, if planning to receive fellowship funding during the term of graduation.

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 the Institute's total withdrawal date—published by the Registrar's Office and normally around two-thirds of the way into the term, the student should enroll in 1 credit hour and be paid as a GA (not GRA) only through the defense date. In this case, the normal requirement of the Institute for a minimum enrollment of three hours is waived. A student registers for one credit of thesis hours (BMED 7000 or 9000) and

must pay for that hour personally. The student is hired as a Graduate Assistant (not GRA and thus no tuition waiver is available) and paid for part or all of the term with the wage to be negotiated with faculty advisor. The student and faculty advisor may also negotiate reimbursement of the tuition and fees. This one-credit hour option may be used only one time.

If issues that prolong completion of the program arise and a student exhausts the one-credit hour option, the student must then register for three credit (thesis) hours and must pay for those hours personally. Normally, the student is neither working nor paid and thus a tuition waiver not be granted in this case.

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

Option 3: Away From School and Working on Thesis Remotely

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

Option 4: Completely Finished; Missed Deadline for Graduation in 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 thus 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, the person may be hired as a non-student (e.g., Tech Temp). A student is eligible for this option only if having been registered in the immediately preceding term.

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

10.2 DEGREE APPLICATIONS

Degree applications must be submitted well in advance of the thesis defense and planned graduation. See Chapter 9 for details.

10.3 THESIS FORMAT CHECK

Soon 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. There is no need to wait until the document is complete or after the defense and an early format check will help expedite the final draft process later on. The very latest that a format check can be scheduled is one week prior to the final thesis submission deadline. The format check may be done in person or via e-mail submission. Theses checked for formatting by Georgia Tech are considered acceptable for submission at Emory.

10.4 THESIS SUBMISSION

The Graduate offices of Georgia Tech and Emory both utilize the same third-party Electronic Theses & Dissertations (ETD) submission system. As such, BME students submit their theses electronically via Georgia Tech and submit a printed copy to Emory. The Georgia Tech Thesis Manual provides specific instructions on submitting electronically. The hard copy required by Emory should be unbound and may be printed double-sided on regular paper (including the approval forms with signatures and title pages used as cover sheets) as dictated by the Emory Graduate School contact listed in Appendix A.

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 and a significant amount of master's research will be published in the open, refereed literature.

10.5 REQUIRED FORMS

A complete checklist of forms and documents required throughout the BME program is found in Appendix F. The checklist includes the appropriate recipients for all forms and documents. Most are housed on the GT side with the Graduate Program Manager forwarding certain documents (e.g., Admission to Candidacy, Minor, and Certificate of Thesis forms) to Emory on the student's behalf. All institutional level forms must be submitted to the appropriate offices before a student will be cleared for graduation at each institution. Each student is responsible for ensuring that all requirements have been met and all forms and documents submitted. The Graduate Program Manager is available to assist students with any questions.

10.6 COMMENCEMENT

Students in the BME program may attend either the Georgia Tech or Emory commencement ceremony 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. Doctoral students attending the Georgia Tech commencement must purchase caps and gowns while the Institute will provide hoods. Students attending the EU commencement must purchase all applicable regalia. The faculty advisors will attend and hood their students (or secure their own alternates in case attendance is not possible).

10.7 DIPLOMAS

Diplomas for students in the BME program are produced by Emory and thus it is critical that the most current mailing address is provided before commencement. The diplomas include the seals from both Georgia Tech and Emory. Diplomas for students in the PKU program include seals from Georgia Tech, Emory, and PKU.

10.8 TRANSCRIPTS

Students in the joint 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 via OSCAR but use the Georgia Tech Transcript Request Form found on the BME Graduate Forms section of the BME website.

10.9 REQUEST FOR EXTENSIONS OF PROGRAM TIMELINE

Often due to unexpected research results, students need to request extensions of 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 Graduate Program Manager or Associate Chair for Graduate Studies and/or submit petitions to the BME Graduate Committee as 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.

10.10 INTERNATIONAL STUDENT IMMIGRATION EXTENSIONS

International students who need to request extensions for immigration purposes such as I-20 and OPT paperwork must consult with the Office of International Education (OIE). The forms that require departmental approval must be submitted to the Graduate Program Manager who will ensure that advisors approve before signing and returning the forms to OIE.

10.11 ASSOCIATED DEGREE PROGRAMS

As most of the associated degree programs (BIOE, BINF, CSE, ML, ROBO) are not involved with Emory, students need only follow the Georgia Tech guidelines for submitting final degree paperwork. In general, the steps should be the same for all students. However, 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 major/program in which they participate.

APPENDIX A

Department Directory

MAIN OFFICES

Georgia Tech campus

U.A. Whitaker Building (UAW)
313 Ferst Drive, Room 2127
Atlanta, GA 30332-0535
(404)385-0124

Emory campus

Health Sciences Research Building (HSRB)
1760 Haygood Drive, Suite W 200
Atlanta, GA 30322-4600
(404)727-9874

Peking campus

PKU/Georgia Tech/Emory BME PhD
Program Office Room 316-2, Founder
Building,
No.298, Cheng Fu Road, Hai Dian District,
Beijing, China 100871

Other buildings referenced below include the P.H. Petit Biotechnology Building (IBB) on the Georgia Tech campus and the School of Medicine Education & Administration Building (SOM) on the Emory campus.

FACULTY

The faculty information most relevant to the graduate program is listed below. For a full listing of the department's faculty, please see <https://www.bme.gatech.edu/bme/faculty>. A complete list of faculty committees is available via the department chair's office. Specific contact information when not listed below can be found on the faculty website as well.

Administration

Susan Margulies, *Chair*

susan.margulies@gatech.edu UAW 2116 (404) 385-5038

Mike Davis, *Associate Chair for Graduate Studies*

michael.davis@bme.gatech.edu HSRB W486 (404) 727-9858

Kyla Ross, *Director of Graduate Training*

kyla.ross@gatech.edu UAW 1109 (404) 385-5045

Qiushi Ren, *Chair of BME at Peking University*

renqsh@coe.pku.edu.cn

Cheng Zhu, *Professor & PKU Program Director*

cheng.zhu@me.gatech.edu

IBB 3312

(404) 894-3269

Committees

GRADUATE ADMISSION

Manu Platt, <i>Chair</i>	Yonggang Ke
Lee Cooper	Gabe Kwong
James Dahlman	John Oshinski
Erik Dreaden	Paco Robles
Eva Dyer	Annabelle Singer
Baowei Fei	Wei Sun

GRADUATE COMMITTEE

Mike Davis, <i>Chair</i>	Brooks Lindsey	Nick Willett - Prog. Fac.
Erin Buckley	Machelle Pardue	Shannon Sullivan - Staff
Hee Cheol Cho	Lena Ting	Fatiesa Sulejmani -
Bilal Haider	May Wang	Student
Wilbur Lam	Cheng Zhu	Aline Yonezawa -
Robert Lee		Student

Associated Degree Programs

Umit Catalyurek, *Director Computational Science & Engineering*
umit@gatech.edu

Irfan Essa, *Director Machine Learning*
irfan@gatech.edu

Andres Garcia, *Director Bioengineering*
andres.garcia@me.gatech.edu

Bob Gross, *Director MD/PhD*
rgross@emory.edu

King Jordan, *Director Bioinformatics*
king.jordan@biology.gatech.edu

Nader Sadegh, *Director Robotics*
nader.sadegh@me.gatech.edu

STAFF

The staff information most relevant to the graduate program is listed below. For a full listing of the department's staff, please see <https://www.bme.gatech.edu/bme/staff>.

Academic Office

Sally Gerrish, *Manager- Student, Alumni and Industrial Relations*
sally.gerrish@bme.gatech.edu UAW 1109A (404)894-7063

Shannon Sullivan, *Graduate Program Manager*
shannon.sullivan@bme.gatech.edu UAW 1108 (404)385-2557

Finance Office

Leilani Burkhead, *Financial Administrator-Student Payroll*
leilani.burkhead@bme.gatech.edu UAW 1116 (404)385-0247

Tracie Dinkins, *Financial Manager*
tracie.dinkins@bme.gatech.edu UAW 1113 (404)385-0372

Shuana Durham, *Assistant Director of Financial Operations*
shuana.durham@bme.gatech.edu UAW 1112 (404)385-1792

Administrative Staff

Marla Bruner, *Georgia Tech Interim Director of Graduate Studies*
marla.bruner@grad.gatech.edu (404)-894-0099

Valencia Cantrell, *BME-HR Coordinator*
valencia.cantrell@bme.gatech.edu UAW 2114 (404)385-1352

Tamika Hairston, *Emory Graduate School Registrar*
tamika.hairston@emory.edu (404)727-6033

Dewayne Roberson, *Whitaker Building Coordinator*
dewayne.roberson@bme.gatech.edu UAW 2127 (404)385-0124

Lisa Simmons, *BME-Emory Dept. Administrator*
lisa.simmons@emory.edu WMB 2001 (404)727-9875

Jackie Strickland, *Georgia Tech Fellowships Coordinator*
jstrickland@grad.gatech.edu Savant 318 (404)385-3122

Renee Webb, *Emory Graduate School-Degree Completion*
renee.webb@emory.edu (404)727-4870

Leita Young, *BME-Emory Administrative Assistant*
leita.young@emory.edu WMB 2001 (404)712-9716

Technology Staff

Chris Aldridge, *Computer Services Specialist*
help@bme.gatech.edu UAW 4242 (404)385-1572

Steven Marzec, *Operating Systems Analyst/Lead Developer*
steven.marzec@bme.gatech.edu UAW 0208 (404)385-1572

Jesus Mata-Acosta, *Computer Services Specialist*
jesus.mata@bme.gatech.edu UAW 0208 (404)385-1572

Vickie Okrzesik, *Web Developer/Webmaster*
vickie.okrzesik@bme.gatech.edu UAW 0239 (404)385-5020

Peking University Program Staff

Jialei Luo, *Program Coordinator*
jlluo@coe.pku.edu.cn +86-15210551618

Associated Programs Staff

Cathy Quinones-Maeso, *Associate Director, MD/PhD Programs*
cquinon@emory.edu

Laura Paige, *Academic Advisor -BIOE*
laura.paige@bioengineering.gatech.edu IBB 1103 (404)385-6655

Lisa Redding, *Academic Program Coordinator-BINF*
lisa.redding@biology.gatech.edu EBB 2009 (404)385-1720

Kyla Reese, *Program and Operations Manager – ML*
kreese@cc.gatech.edu

Anna Stroup, *Administrative Coordinator-CSE*
astroup@cc.gatech.edu (404)3854785

Becky Wilson, *Staff Coordinator -ROBO*
rwilson@cc.gatech.edu (404)385-1728

APPENDIX B

Internet Resources

GENERAL INFORMATION

Current information on academic programs, faculty, staff, research, news and events are found on the departmental website. The Academic Office section includes an electronic copy of this handbook and links to pertinent graduate program resources.

Georgia Tech – <http://www.gatech.edu/>

Emory - <http://www.emory.edu/>

Peking University - <http://english.pku.edu.cn/>

BME website - <http://www.bme.gatech.edu/>

Academic Office website - <http://www.acad.bme.gatech.edu/>

Research areas/faculty websites - <https://www.bme.gatech.edu/bme/research-professionals>

ASSOCIATED DEGREE PROGRAMS

Bioengineering – <http://www.bioengineering.gatech.edu/prospective-students>

Bioinformatics – <http://www.bioinformatics.biology.gatech.edu/>

Computational Science & Engineering –

<http://www.cse.gatech.edu/academics/phd-programs>

Machine Learning - <http://ml.gatech.edu>

MD/PhD - <http://www.med.emory.edu/education/MDPHD/>

Robotics - <http://phdrobotics.gatech.edu>

HONOR CODES

Georgia Tech - <http://honor.gatech.edu/>

Emory - <http://www.gs.emory.edu/academics/policies/conduct.html>

FINANCES

BME Student Support Form – <https://admissions.bme.gatech.edu/students/>

Bursar – <http://www.bursar.gatech.edu/>

Fellowships - <http://fellowships.gatech.edu/> Financial

Aid – <http://www.finaid.gatech.edu/>

GRAs - <http://policies.gatech.edu/book/export/html/875>

REGISTRATION

The Registrar's Office websites from both institutions include the official course catalogs, timelines, deadlines, policies and procedures, forms, and other important information.

Georgia Tech - <http://www.registrar.gatech.edu/>

<https://oscar.gatech.edu/>

<http://www.catalog.gatech.edu/>

Emory - <http://www.registrar.emory.edu/>

<http://www.gs.emory.edu/uploads/academics/LGS%20Handbook.pdf>

Peking University - <http://english.pku.edu.cn/Admission/Graduate/>

DEGREE COMPLETION & GRADUATION

A number of forms are required by both institutions in order to show proof of program completion and apply for graduation. For more information, see Chapter 9 (details), Appendix C (sample forms), and Appendix F (checklist).

Georgia Tech Graduate Studies & Research - <http://www.grad.gatech.edu/>

Emory Graduate School - <http://www.graduateschool.emory.edu/>

Georgia Tech Commencement - <http://www.gatech.edu/commencement/>

Emory Commencement - <http://www.emory.edu/commencement/>

BUILDING & CAMPUS RESOURCES

BuzzCard – <http://www.buzzcard.gatech.edu/>

BMED Internal Resources - <https://www.bme.gatech.edu/bme/bme-internal-resources>

Campus Recreation – <http://www.crc.gatech.edu/>

Counseling Center - <http://www.counseling.gatech.edu/>

<http://studenthealth.emory.edu/cs/>

EmoryCard - <http://www.emory.edu/studentfinancials/EmoryCard.htm> Health

Services - <http://www.health.gatech.edu/>

<http://studenthealth.emory.edu/>

Information Technology – <http://www.oit.gatech.edu/home/index.cfm>

<http://it.emory.edu/>

International Students – <http://www.oie.gatech.edu/>
<http://www.emory.edu/ISSP/>
<http://english.pku.edu.cn/Admission/InternationalStudents/>

Parking - <http://www.parking.gatech.edu/>

Room Reservations – <http://acad.bme.gatech.edu/general/room.php> Shuttle

Service between Georgia and Emory –
<http://pts.gatech.edu/subsite2/Pages/Emory-Shuttle.aspx>

APPENDIX C

Forms

Sample forms for the major program milestones and degree/graduation paperwork required are found in this section. Electronic versions of the forms are found online via the websites listed before each sample. All forms can be found at <https://bme.gatech.edu/bme/graduate-forms>.

- Program Faculty Membership Sample Request Letter
- Student Support Form
- BME Advisor-Graduate Student Financial Commitment
- Student-Faculty Interview & Preference Form
- BME & PKU Proposed Program of Study
- BMED 7001 Seminar Participation Form
- PKU Ethics Training Completion Form
- Qualifying Exam – Academic Profile & Honor Code
- BME Graduate Milestones Evaluation Form
- PKU BME Project Initiation Form
- Request for Approval of Thesis Committee
- Request for Admission to PhD Candidacy Form
- PKU Request for Admission to PhD Candidacy Form
- Request for Approval of Master’s Thesis Topic Form
- Doctoral Minor Form
- PKU Research Update Confirmation Form
- Georgia Tech Online Application for Graduation
- Emory Application for Degree Form
- Georgia Tech Certificate of Thesis Approval for Doctoral Students Form
- Georgia Tech Certificate of Thesis Approval for Master Students Form
- PKU Thesis Defense Records
- PKU Certificate of Thesis Approval
- PKU Statement of Originality of Thesis & Copyright Statement
- PKU Degree Approval Form
- Georgia Tech Enrollment Waiver Form
- BME & PKU Graduate Student Checklist
- Georgia Tech Transcript Request Form for Emory Lab Students

APPENDIX D

Teaching Assistant Roles & Responsibilities

A TA serves primarily in BME undergraduate courses and the assignment may include an appropriate range of supportive activities such as: assisting the faculty member with the preparation of course materials and/or laboratory demonstrations; attending the faculty member's lectures, laboratory, instruction periods, and/or scheduled instruction periods in non-traditional formats; grading student papers and examinations; holding office hours; giving tutorial or small group assistance to students; teaching in scheduled or unscheduled recitation, discussion, quiz, or laboratory sections for the faculty member in charge.

A TA is expected to devote an average of ten hours weekly for the fifteen-week semester and following final examination period. Duties will vary according to the needs of each course, yet it is important that these ten hours per week average be observed so as to accommodate the TAs own schedule as a graduate student. The TAs should expect that some weeks may require more than ten hours due to course setup, grading, or other course demands.

A TA and instructor should discuss all elements of the course (i.e., assignments, quizzes, exams, papers, projects, grading, office hours, recitations, and review sessions). The instructor should also advise the TA as to how class preparations and grading may be done most effectively and efficiently. The instructor is responsible for supplying each TA copies of all assigned materials, including books. The instructor should observe and critique the TA's work and performance in the course, conveying to the TA his/her strengths and weaknesses. This critique might be written or oral but in any event offers a valuable occasion for enhancing the teaching ability of the graduate student.

When a TA believes that he/she is being asked to perform duties beyond those specified, or when the TA or instructor is experiencing unusual difficulties in the work relationship, they should consult the Director of Graduate Training. Such talks will be informal, information will be treated confidentially, and, when indicated, the Director of Graduate Training will consult with the Associate Chair for Graduate Studies to seek resolution. Should these discussions not result in a satisfactory solution, any and all participants may refer the matter to the Chair of the Department.

At the beginning of each semester, the TA and instructor must complete and sign the BME Graduate Teaching Assistant Expectations Form (found on the MyBME website), in which the instructor outlines responsibilities and expectations of the TA. This form must be submitted via the course management system by the second Friday after the start of the term. At the end of each term, the instructor must complete and submit the BME Graduate Teaching Assistant Evaluation Form via the course management system by the Friday following finals week.

Included on this form is an evaluation rubric, grading the performance of the TA that term. All TAs must earn an average of 3 on each criterion for successful completion of his/her TA position. Failure to reach this level of performance will result in an additional semester of TA responsibilities, as well as one-on-one teaching training at the Center for Teaching and Learning (CTL) at Georgia Tech.

APPENDIX E

Format of the Written Proposal

PART I: Cover Sheet

The cover sheet for the proposal should be the Georgia Tech Request for Admission to PhD Candidacy Form. (See below.) The Thesis Topic Title should be brief, scientifically and technically valid, understandable to a scientifically literate reader, and suitable for use in the public press. The Brief Description should be a 200-word summary and a self-contained description of the proposed activity.

The summary should be written in the third person and include a statement of objectives, methods to be employed, and the significance of the proposed activity to the advancement of knowledge. It should be informative to other persons working in the same or related fields, and insofar as possible, understandable to a scientifically literate reader.

PART II: Table of Contents

A table of contents is required and should show the location of each section of the proposal as well as major subdivisions of the project description, such as the summary of previous work and methods/procedures to be used.

PART III: Project Description (Limited to 25 pages)

The proposal should be written in a format similar to that of a National Institutes of Health (NIH) R01 grant application (PHS 398, available at

<http://grants.nih.gov/grants/funding/phs398/phs398.pdf>). The following description is adapted from PHS 398, section 5.5.

The main body of the proposal should be a clear statement of the work to be undertaken and should include (a) objectives for the proposed research and expected significance, (b) relation to longer-term goals of the investigator's project; and relation to the present state of knowledge in the field, to work in progress by the investigator under other support, and to work in progress elsewhere; and (c) a general plan of work including the broad design of activities to be undertaken; an adequate description of methods and procedures; and if appropriate, plans for preservation, documentation, and sharing of data, samples, physical collections, and other related research products.

Specifications of the Project Description:

1. The project description must not exceed 25 single-spaced pages.
2. Visual materials, including charts, graphs, maps, photographs, and other pictorial presentations are included in the 25-page limit.
3. Pages should be of standard 8.5 x 11in-size with 1in margins at the top, bottom, and sides.

4. The type size must be clear and readily legible, in standard 11 point font size.
5. Pursuant to the Metric Conversion Act of 1975, as amended by the Omnibus Trade and Competitiveness Act of 1988, the proposal is required to use the metric system of weights and measures, unless impractical or inefficient.

SPECIFIC AIMS

State concisely the goals of the proposed research and summarize the expected outcome(s), including the impact that the results of the proposed research will exert on the research field(s) involved.

List succinctly the specific objectives of the research proposed, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology. Specific Aims are limited to one page.

BACKGROUND

Include a brief literature review describing the current state of your proposed field of study to readers. A well-selected thesis committee will include members from a spectrum of backgrounds, so it is critical to provide a starting set of knowledge to provide context for your proposed project.

PRELIMINARY STUDIES

Describe the results of all relevant pilot studies performed by yourself or your lab that are relevant to the proposed research plan. Like the Background section, clear and concise description of preliminary work is essential to inform all committee members of your research's progress in the context of the field. Pilot studies are helpful as a proof of concept that you can successfully perform the research you propose but are not essential to perform a thesis proposal.

RESEARCH DESIGN & METHODS

Organize the Research Strategy in the specified order and using the instructions provided below. Start each section with the appropriate section heading—Significance, Innovation, Approach.

Address the following for each specific aim:

(a) Significance/Rationale

- Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses.
- Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.
- Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved.

(b) Innovation

- Clearly and concisely state the hypothesis or, in cases of specific aims with design goals that are not well posed as hypotheses, the objective.

- Explain how the application challenges and seeks to shift current research or clinical practice paradigms.
- Describe any novel theoretical concepts, approaches or methodologies, instrumentation or intervention(s) to be developed or used, and any advantage over existing methodologies, instrumentation or intervention(s).
- Explain any refinements, improvements, or new applications of theoretical concepts, approaches or methodologies, instrumentation or interventions.

(c) Approach

- Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project. Include how the data will be collected, analyzed, and interpreted.
- Summarize your expected results from these studies. If the project is in the early stages of development, reference any preliminary studies performed to establish feasibility, and address the management of any high risk aspects of the proposed work.
- Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims.

SUMMARY

Include a brief summary of the work you have proposed.

TIMELINE

To help your thesis committee and yourself visualize the anticipated progress of your work, include a timeline describing projected completion dates for specific aims and other milestone accomplishments. You are not bound to follow this timeline, as unforeseen challenges abound in scientific research, but careful consideration of this timeline will assist you in developing a reasonable, achievable plan for your thesis.

ETHICAL ASPECTS OF THE PROPOSED RESEARCH

All biomedical research requires ethical consideration. Research methodologies often include human or animal subjects, and many procedures involve Select Agents identified by DHHS and the USDA. Research with potential for commercialization or taking advantage of intellectual property may require mitigation of conflicts of interest. A proper thesis proposal is not complete without consideration and acknowledgment of these ethical possibilities. Describe all ethical aspects of your proposed research and how you will address them (for example, through approval of the IRB or IACUC, as necessary). A more thorough description of ethical aspects is available in sections 5.5.6 – 5.5.11 of PHS 398 (<http://grants.nih.gov/grants/funding/phs398/phs398.pdf>).

PART IV: Bibliography

Citations must be complete, including full name of authors, title, and location in the literature. There is no page limit for this section of the proposal.

APPENDIX F

BME & PKU Graduate Student Checklist

Atlanta Campus

This checklist includes the major steps that must be completed and documents submitted by each BME graduate student. The timeline/deadlines for all forms are described in the relevant chapters of the handbook and/or published on the websites of the responsible departments.

The recipients for the various documents are designated in parentheses as follows: **GPM** – Graduate Program Manager, **GT Grad** – GT Graduate Office, **GT Reg** – GT Registrar, **EU Grad** – EU Graduate School, **EU Reg** – EU Registrar, **OSP** – GT Office of Sponsored Programs, **PKU GPC** – PKU Graduate Program Coordinator (Beijing campus). Items designated as PKU are applicable only for students in that program.

All forms that require departmental approval must be given to the GPM at least two weeks in advance of the published deadlines. Copies of ALL completed/signed forms must be given to the GPM for the student's file in the BMED Academic Office.

- Final Admission Paperwork** (GT Grad)
- PKU Admission Paperwork** (PKU GPC)
- Online Student Support Form** (must be updated each semester)
- Faculty Advisor Assignment**
- Program of Study** (GPM)
- Qualifying Exam** – Honor Code Pledge & Academic Profile (GPM)
- Thesis Committee Approval Request** (GPM)
- Proposal Announcement** (GPM & PKU GPC)
- Proposal Document to Committee**
- Proposal Presentation**
- PKU BME Project Initiation Form** (OSP & GPM)
- PKU Travel to Beijing Campus** (GPM & PKU GPC)
- Admission to PhD Candidacy or Master's Thesis Topic:** **GT** (GPM) **PKU** (PKU GPC)
- Milestones Evaluation Forms** - Proposal (GPM) – 1 from each thesis committee member
- Doctoral Minor** (GPM)
- PKU Research Update Confirmation** (PKU GPC)
- Applications for Graduation/Degree:** **GT** (GT Reg) **EU** (EU Grad) **PKU** (PKU GPC)
- Thesis Defense Announcement** (GPM & PKU GPC)
- Thesis Draft to Committee**
- Thesis Defense**
- Thesis Approval forms:** BME Milestones Evaluation Forms - Defense (GPM) – 1 per thesis committee member
 GT Certificate of Thesis Approval (GPM) – 2 originals for PKU students
 EU Approval Sheet* (EU Grad) – submit to Emory with other documents noted below
- Thesis Submission:**
- Georgia Tech** (GT Grad):
 - Students should follow all instructions in the thesis manual online at <http://www.gradadmiss.gatech.edu/theses-dissertations>. For any documents requiring that the name of the institution be included, students should add Georgia Institute of Technology and Emory University (and Peking University, as applicable).

- Emory** (EU Grad): Only 3 items are required to submit directly
- EU Approval Sheet*
 - EU Distribution Agreement
 - EU Exit Survey Certificate – print after completion of survey found online at <http://www.gs.emory.edu/academics/completion/index.html>
- Georgia Tech Enrollment Waiver**, if applicable (GT Grad)
- PKU Students should check with the PKU GPC for all instructions related to thesis submission & degree completion for Peking University**

*NOTE: Submit plan for next career step to GPM via email at this time.

- Commencement Attendance Notification:**
 - Inform GT if attending (GT Reg)
 - Inform Emory if NOT attending (EU Grad)
 - Inform PKU if NOT attending (PKU GPC)