

## Graduate Handbook

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### **Table of Contents**

1. Introduction .....	3
2. Classification of graduate students .....	3
3. Course load requirements.....	3
4. Financial assistance .....	2
5. Dismissal policy.....	2
6. Satisfactory progress toward degree .....	3
7. MS degree programs .....	4
7.1. Degree requirements .....	4
7.2. The MS Thesis .....	6
7.3. Program of Study.....	7

7.4. Transfer of credit.....	7
7.5. Degree petition.....	7
7.6. Summary of deadlines for MS candidates.....	7
8. Doctor of Philosophy Program.....	8
8.1. PhD Qualifying Examination.....	9
8.2. Thesis Proposal and Oral Defense.....	10
8.3. Admission to Candidacy.....	11
8.4. Thesis Research.....	11
8.5. The PhD dissertation.....	11
8.6. Course requirements.....	12
8.7. The pre-doctoral review.....	13
8.8. Fourth-year requirements.....	13
8.9. The degree petition.....	13
8.10. Final PhD examination.....	13
8.11. Summary of deadlines for PhD students.....	14
9. Graduate seminars.....	15
10. Preregistration for courses.....	15
11. Multidisciplinary programs.....	15
12. The academic year.....	16
13. Responsible conduct of research (RCR) Training for Graduate Students.....	16
14. Safety.....	17
15. Computer facilities and computer use.....	17
16. Purchasing and Procurement.....	18
17. Travel.....	18
18. TA Service.....	18
19. Forms.....	19

## **1. Introduction**

The purpose of this handbook is to outline special regulations and policies relevant to the graduate programs in the School of Chemical & Biomolecular Engineering. Institute regulations regarding graduate work at Georgia Tech can be found in the General Catalog available at <http://www.catalog.gatech.edu>.

## **2. Classification of graduate students**

Almost all graduate students in the School are admitted with *Full Graduate Standing* for study toward their MS or PhD degree. In a few cases, a student may be admitted with *Special Graduate Standing*. Courses taken by students on special standing cannot be counted toward a graduate degree at Georgia Tech unless a petition is approved by the Institute Graduate Committee.

According to Institute rules, full-time graduate students must register for at least 12 hours per semester on a letter grade or pass/fail basis. A part-time student may register for no more than 11, and no less than 3 hours of credit (except during the semester of graduation – see below).

Course loads for students who have assistantships, fellowships or tuition waivers from the School of Chemical & Biomolecular Engineering are discussed below.

## **3. Course load requirements**

*In order to be eligible for reduced GRA/GTA tuition*, students with GRA/GTA appointments in the School of Chemical & Biomolecular Engineering must enroll for 21 hours of credit in the Fall and Spring semesters, and 16 hours of credit in the Summer semester. These hours will normally consist of course credit hours, plus ChBE 7000 or ChBE 9000 credit hours for research, as appropriate.

In the event that the research is due to be completed before the end of a semester, then two options are available:

- The student may register as a full-time GRA and remain beyond mid-semester. The student can leave anytime past mid-semester without incurring a tuition penalty. If a GRA student departs prior to the mid-semester point, the student will be billed for part of the tuition not paid by the GRA.
- If the student departs prior to mid-semester, the student may register for a minimum of one credit hour of ChBE 7000 or ChBE 9000, and pay the appropriate tuition and fees based on residency status. The student will be classified as a Graduate Assistant (GA), and will be paid on an hourly basis.

If the thesis is defended and submitted to the Institute after the Institute thesis submission deadline for the semester, but before the beginning of the next semester, then the student may apply for an enrollment waiver during the graduating semester. This must be done prior to the beginning of the graduating semester. Note that this waiver can be granted only if all degree requirements have been satisfied during or prior to the registration phase of the graduating semester.

In all cases, the School Graduate Office must be informed of the date of completion so that the student's payroll status can then be changed accordingly.

#### **4. Financial assistance**

Most graduate students in the School are appointed as GRA/GTAs when working toward the MS (thesis option) or PhD degree. The normal terms of support for GRA/GTAs are contingent upon availability of funds and are based on satisfactory progress in coursework and research (discussed in the following sections).

#### **5. Dismissal policy**

A graduate student appointed as a GRA/GTA at the MS (thesis option) or PhD level is expected to carry out research as part of his/her degree requirements. (GRA/GTAs may not therefore transfer to the MS (non-thesis option) without approval of their thesis advisor and the Associate Chair for Graduate Studies). The GRA/GTA appointment will normally be for one semester, with renewal subject to satisfactory progress towards the intended degree, including satisfactory progress in research. Research duties and research progress will be determined by the faculty/research advisor. Unsatisfactory performance in

research could lead to loss of research supervision, as well as non-renewal of the GRA/GTA appointment. This applies even if the student's GPA meets or exceeds the minimum set by the School.

A student whose research performance is determined to be unsatisfactory will receive a letter or e-mail from his/her research advisor listing all deficiencies and/or outlining the level of performance required to continue working with the advisor. This will be communicated to the student at least one month before the end of the semester, and a copy will be provided to the Associate Chair for Graduate Studies for inclusion in the student's file. The deficiencies must be remedied before the end of the semester in order to prevent dismissal from the advisor's research group and/or loss of GRA/GTA status. The GRA/GTA appointment will not normally be terminated before the end of a semester.

If a student's GPA is less than 3.2 and/or the student fails the qualifying exam twice, the School is no longer obligated to provide a GRA. At his or her discretion, the advisor may continue GRA support as funds allow while the student works to meet academic requirements.

A student who no longer has an advisor may seek another advisor with help from the Associate Chair for Graduate Studies. A PhD student who cannot find a new advisor after one term must leave the School or may opt to transfer to the MS (coursework option) program and finish this degree at their own expense. A MS student who cannot find a new advisor after one term must change his/her status to that of a MS (coursework option) student, or leave the School. If there are extenuating circumstances, the Associate Chair for Graduate Studies may extend this period for one additional term at his/her discretion. A graduate student who is dismissed by the Institute for academic or disciplinary reasons will not normally be readmitted to the School.

## **6. Satisfactory progress toward degree**

Satisfactory progress for MS students will be evaluated as follows:

- (a) Satisfactory completion of core coursework by the end of the second semester in residence. (thesis and coursework options)
- (b) Satisfactory progress in research. Research performance will be evaluated by the advisor and includes initiation of research in the first semester of residence, submission of a thesis, and successful defense of the thesis, as well as any progress reports required by the advisor. The program should be completed in no more than six semesters. (thesis option)

Satisfactory progress for PhD students will be evaluated as follows:

- (a) Satisfactory performance in a qualifying examination. Normally, this will be completed by the end of the 2nd semester of residence
- (b) Submission of a written thesis proposal and satisfactory oral defense of this proposal. This must be completed by the end of the 6th semester of residence. Failure to do so will also result in an “unsatisfactory” grade for research.
- (c) Satisfactory completion of a pre-doctoral review. This is generally completed at least 6 months before the dissertation defense. Failure to do so may also result in an “unsatisfactory” grade for research.
- (d) Presentation of research results at the Fall Graduate Colloquium.
- (e) Submission of an acceptable dissertation, and satisfactory oral defense of this dissertation. This should normally be completed in 12-15 semesters in residence
- (f) Satisfactory completion of specified courses, including courses in a minor area of study.

## **7. MS degree programs**

The School of Chemical & Biomolecular Engineering offers programs of study leading to the degree of Master of Science (MS) in Chemical Engineering (thesis or coursework option), the Master of Science (MS) in Bioengineering, and the Master of Science (MS) in Paper Science & Engineering.

It is expected that most MS students in ChBE will be taking the coursework option. Students in the MS program cannot switch into the PhD program or take the qualifier exams without approval of the ChBE Graduate Office. Students are not encouraged to pursue the thesis option MS unless it is funded through a GRA and a research advisor has been found.

Students admitted to the thesis MS or PhD program who receive a stipend may not transfer into the coursework MS program without approval from the thesis advisor and the ChBE Associate Chair.

### **7.1. Degree requirements**

Degree requirements for the MS in **Chemical Engineering (thesis option)** are as follows:

	<u>Credits</u>
ChBE 6003 Chemical Process Safety	1
ChBE 6100 Chemical Engineering Thermodynamics	3
ChBE 6200 Transport Phenomena: Momentum and Heat Transfer	3

ChBE 6260 Mass Transport	3
ChBE 6300 Kinetics and Reactor Design	3
ChBE 6500 Mathematical Modeling of Chemical Processes	3
ChBE 6xxx Chemical Engineering Elective	3
Other Elective	3
ChBE 7000 Master's Thesis	9

TOTAL Credit Hours ..... 31

Degree requirements for the MS in **Chemical Engineering (coursework option)** are as follows:

	<u>Credits</u>
ChBE 6003 Chemical Process Safety	1
ChBE 6100 Chemical Engineering Thermodynamics	3
ChBE 6200 Transport Phenomena: Momentum and Heat Transfer	3
ChBE 6260 Mass Transport	3
ChBE 6300 Kinetics and Reactor Design	3
ChBE 6500 Mathematical modeling of chemical processes	3
ChBE 6xxx Chemical Engineering Elective	3
Other Electives	12

TOTAL Credit Hours ..... 31

Degree requirements for the MS degree in **Paper Science and Engineering** are as follows:

	<u>Credits</u>
ChBE 6003 Chemical Process Safety	1
ChBE 6100 Chemical Engineering Thermodynamics	3
ChBE 6200 Transport Phenomena: Momentum and Heat Transfer	3
ChBE 6260 Mass Transport	3
ChBE 6300 Kinetics and Reactor Design	3
ChBE 6741 Pulp and Paper Manufacture I	3
ChBE 6742 Pulp and Paper Manufacture II	3
ChBE 6252 Chemical Engineering Processes in Pulp and Paper Manufacture	3
ChBE 6xxx PSE Elective	3
ChBE 7000 Master's Thesis	9

TOTAL Credit Hours ..... 34

It should be noted that:

- ChBE core courses are taught only once a year, generally in the Fall (ChBE 6003, 6100, 6260, 6300, 6741) and Spring (ChBE 6200, 6742) semesters
- all courses must be completed with a letter grade of A, B, or C.
- an overall GPA of 2.7 is required to graduate with a MS degree
- a list of PSE elective courses may be obtained from the PSE advisor.
- electives may be at the 4000 or higher levels from any school, with a maximum of 6 credits at the 4000 level. Electives may not include special problem courses or courses required in the BSChBE curriculum.
- electives can include special topics (8803) courses if the course meets 3h per week for the entire semester for lecture or discussion.

Degree requirements for the MS degree in **Bioengineering** are outlined on the website of the Bioengineering program. However, Bioengineering degree students with Chemical & Biomolecular Engineering as their home school must complete at least 9 credits of ChBE core courses.

## **7.2. The MS Thesis**

A candidate for the MS degree (thesis option) must present a treatise setting forth the results of an investigation completed by the student under the direction of a member of the faculty of the School (the thesis or research advisor). The subject of the investigation will be assigned to the student during the first semester, after the student has familiarized himself/herself with the research programs in the School. After completion of the investigation, the student must also present an oral defense of the thesis as part of the requirement for the MS degree. **The oral presentation should generally be 30-45 minutes in length.**

Students must file with the Graduate Studies Committee and the Dean of Graduate Studies a formal request for approval of their MS Thesis Topic, naming the Thesis Reading Committee (or Thesis Advisory Committee), and setting forth the topic selected for research, the purpose of the investigation and the steps proposed to conduct it.

The MS Thesis Reading Committee should consist of at least three faculty members, including at least two from the School of Chemical & Biomolecular Engineering. At least two of the members should also be from the program faculty of the degree that the student is seeking (Chemical Engineering, Paper Science & Engineering, or Bioengineering).

The format of the thesis is described in the **Manual for Graduate Thesis**, available from the Office of Graduate Studies. The thesis must be submitted to

the Thesis Reading Committee **at least two weeks prior to the date of the oral defense**. The MS thesis defense should involve the thesis advisor and Reading Committee. In addition, faculty and students in the School must be notified at least 14 days in advance as to the date, time, and place where the defense is to take place. After the student has satisfactorily defended the thesis, and made final corrections in accordance with suggestions by the Committee, he/she must present a final version of the thesis to the Committee and to the Dean of Graduate Studies. This must be done at least three weeks before graduation. The final copy of the thesis must also be submitted to the Assistant Dean of the Graduate Division for approval at least 15 days before graduation.

### **7.3. Program of Study**

MS students are required to submit an approved program of study form to the Institute Graduate Studies Office no later than the last day of classes of the semester prior to that in which the student expects to graduate. Students whose programs are received later than this date will have their graduation delayed by one semester.

### **7.4. Transfer of credit**

Institute policies permit the transfer of a maximum of 6 hours of graduate-level course work from another US institution to apply towards a Masters Degree. The student must file a petition with the Associate Chair accompanied by descriptive material such as transcripts, catalog descriptions and listings of textbooks used. The Georgia Tech equivalent for each course must also be provided. The student should discuss this petition with his/her thesis advisor before requesting that it be considered by the Associate Chair. This should be done during the first two semesters that the student is at Georgia Tech. More detailed information regarding transfer of credit is given in the General Catalog.

### **7.5. Degree petition**

Degree candidates must file with the Registrar a Petition for Degree in the semester prior to that in which graduation is expected. Any errors in this petition may delay graduation until the following semester. Students who do not complete their requirements when anticipated must file a reactivation petition. This form is also due in the semester prior to the student's expected graduation date. Reactivation instructions may be obtained from the Office of the Registrar.

### **7.6. Summary of deadlines for MS candidates**

*First Semester:*

(a) Submit list of preferences for research project;

- (b) Selection of an advisor;
- (c) Petition for transfer credit.

*Subsequent Semesters:*

- (a) Select a Thesis Reading Committee;
- (c) Submit a Request for Approval of MS Thesis Topic.

*Semester prior to graduation:*

- (a) Submit Approved Program of Study;
- (b) Submit Petition for a Degree.

*Final Semester:*

- (a) Submit draft of thesis to Reading Committee **at least two weeks** prior to oral defense;
- (b) Schedule an oral defense and submit a Notification of Thesis Defense to the School Graduate Office **at least two weeks** prior to defense;
- (c) Submit final version of the thesis to the Graduate Division at least three weeks before the date of graduation.

## **8. Doctor of Philosophy Program**

The Institute requirements for the Ph.D. degree are described in the General Catalog. The School of Chemical & Biomolecular Engineering requirements are as follows:

- (a) Satisfactory performance in a qualifying examination.
- (b) Submission of a written thesis proposal and satisfactory oral defense of this proposal.
- (c) Completion of a pre-doctoral review, at least 6 months before the thesis defense
- (d) Research presentation at the Fall Graduate Colloquium during the fourth year.
- (e) Submission of an acceptable dissertation, and satisfactory oral defense of this dissertation.
- (e) Satisfactory completion of core courses and 9 credit hours of courses in a minor area of study.

These requirements are discussed more fully below.

### **8.1. PhD Qualifying Examination**

Students seeking a PhD degree in Chemical Engineering or Paper Science and Engineering, and having the School of Chemical & Biomolecular Engineering as an academic home, must pass the PhD qualifying examination, which is given twice a year - once in January and again in May. Students entering in the Fall semester must take the examination offered during the following January; students entering in the Spring or Summer semesters must take the examination by the following January. If a student does not take the PhD qualifying exam during the normal time period, he/she must complete the MS degree requirements and take the qualifying examination at the first opportunity after defending the MS thesis. A student failing the examination may retake the failed exam(s) once, the next time that the exam is given.

The qualifying exam consists of *three* parts:

*Part I- Oral Exam:* The oral exam will require the student to review and critique a technical paper which will be assigned to the student approximately one week before the exam. The student will be required to make a 10-minute oral critical analysis presentation of the paper at a scheduled time and to a committee of two or more faculty members. This will be followed by a question and answer session lasting no more than 45 minutes covering the paper and other fundamental aspects of chemical engineering, including Material and Energy Balances, Thermodynamics, Fluid Mechanics, Heat Transfer, Mass Transfer, Separations, Reactor Design, and Chemical Kinetics and Catalysis.

*Part II- Research Evaluation:* A satisfactory evaluation of the student's research progress and potential, performed by the research advisor, must be maintained.

*Part III- Course Work:* An average GPA of 3.2 is required in core courses (ChBE 6003, 6100, 6200, 6260, 6300, 6500) for students seeking a PhD in Chemical Engineering and (ChBE 6003, 6741, 6742, 6252) for students seeking a PhD in Paper Science and Engineering.

*Overall Results:* The overall recommendation from the faculty will be based on the student's performance in the three parts cited above. Students seeking a PhD in Bioengineering take a different qualifying exam that is given by the faculty of the Bioengineering Program.

## **8.2. Thesis Proposal and Oral Defense**

The thesis proposal must be presented in writing to the Thesis Advisory Committee and must include the following:

- objectives and specific aims of the research
- thorough but concise review of the relevant literature
- significance of the proposed work and its scientific and societal impact
- preliminary work
- outline of the proposed methodology, anticipated difficulties, and methods for overcoming these difficulties
- timetable for completion of the thesis

The proposal should be **between 10 and 20 pages in length (single spaced, 12 point font, 1 inch margins, including Figures and Tables). A one page abstract is also required, as well as appropriate references (not subject to the page limit).**

The proposal must be defended orally before the Thesis Advisory Committee, whose members must receive the written proposal no later than two weeks prior to the oral examination. The student must also circulate to faculty and graduate students (via the Graduate Office) an announcement of the time and place of the thesis proposal defense. This must be done at least two weeks prior the date of the defense. **The defense will consist of an oral presentation (~ 20 min) by the student**, followed by a question and answer session. The subject matter of the oral defense will be based on, but is not limited to, the research proposal.

The Thesis Advisory Committee will consist of the thesis advisor and at least four other members with knowledge of the research area. At least three committee members must be members of the School of Chemical & Biomolecular Engineering faculty, and at least one committee member must be a member of the faculty of another academic unit at Georgia Tech. The majority of members should also be program faculty (Chemical Engineering, Paper Science and Engineering, or Bioengineering). A brief resume must be included for any member who is not a Georgia Tech faculty member. The Graduate Studies Committee must approve the Thesis Advisory Committee at least 30 days prior to the proposal date.

The thesis proposal defense must be completed **no later than the end of the sixth semester at Georgia Tech.**

### **8.3. Admission to Candidacy**

After successful completion of the qualifying exam and the proposal defense, the student must file with the Graduate Office a formal statement (Request for Admission to PhD Candidacy) naming the Thesis Advisor and Thesis Advisory Committee, and setting forth the topic selected for research. This statement should include the purpose of the investigation and the steps by which the student proposes to conduct it, supported by literature references where appropriate. The Associate Chair will then forward this request to the Dean of the Division of Graduate Studies for the applicant to be formally admitted to PhD candidacy.

### **8.4. Thesis Research**

The thesis research must represent a significant contribution to fundamental knowledge in the field of Chemical & Biomolecular Engineering, and be publishable in a peer-reviewed research journal in the field. The student and his/her thesis advisor will normally formulate the thesis topic. The thesis advisor must be a member of the academic faculty of the School. In some cases, the student may conduct his/her thesis research under an advisor from another School. In this case, the student must have a Chemical & Biomolecular Engineering faculty member as a thesis co-advisor.

### **8.5. The PhD dissertation**

Instructions concerning preparation of the dissertation are available from the Division of Graduate Studies and PhD candidates should familiarize themselves with these instructions. The format of the dissertation must be approved by the Division of Graduate Studies, and the student is required to submit a draft of the dissertation to the Graduate Division no later than three weeks before the date of graduation. This must be done after a successful thesis defense and after approval by the Doctoral Examination Committee (usually the same as the Thesis Advisory Committee).

The student and his/her thesis advisor are expected to publish the completed research in appropriate journal(s) as promptly as possible.

### **8.6. Course requirements**

PhD students in Chemical & Biomolecular Engineering must successfully complete the following courses (or their equivalents) with an average cumulative GPA of 3.2 or higher:

	<u>Credits</u>
ChBE 6003 Chemical Process Safety	1
ChBE 6100 Chemical Engineering Thermodynamics	3
ChBE 6200 Transport Phenomena	3
ChBE 6260 Mass Transport	3
ChBE 6300 Kinetics and Reactor Design	3
ChBE 6500 Mathematical Modeling	3
ChBE xxxx ChBE Elective	3
Courses in minor field of study (see below)	9

The ChBE elective is a 6000 or higher level course in ChBE, separate from other degree requirements such as the minor.

PhD students in Paper Science and Engineering must successfully complete the following courses (or their equivalents) with an average cumulative GPA of 3.2 or higher:

	<u>Credits</u>
ChBE 6003 Chemical Process Safety	1
ChBE 6100 Chemical Engineering Thermodynamics	3
ChBE 6200 Transport Phenomena	3
ChBE 6260 Mass Transport	3
ChBE 6300 Kinetics and Reactor Design	3
ChBE 6741 Pulp and Paper Manufacture I	3
ChBE 6742 Pulp and Paper Manufacture II	3
ChBE 6252 Chemical Engineering Processes in Pulp and Paper	3
ChBE 6xxx Pulp and Paper Elective	3

For all PhD programs within the School of Chemical & Biomolecular Engineering, the Associate Chair for Graduate Studies may waive up to 3 of the required ChBE core courses for students who have received an MS degree in ChBE from a non-US Institution.

Minor requirements: All students are required to demonstrate a mastery of some body of knowledge **outside their major**. This area of study is referred to as a minor program of study. The minor should consist of at least nine semester

hours of work in related, cohesive courses chosen in consultation with the thesis advisor. The courses should be offered by Schools other than Chemical & Biomolecular Engineering (cross-listed courses offered by the School are acceptable). The proposed minor program of study must be approved by the ChBE Graduate Office **before the courses are taken**. At least two of these courses must carry graduate credit, and one course may be at the 4000 level. All courses must be completed with a grade of B or better.

After completing the coursework for the minor, the student should complete the appropriate form and submit it to the Graduate Studies Committee setting forth the list of courses (and grades received) for the minor. The approved minor form will then be submitted to the Dean of Graduate Studies.

### **8.7. The pre-doctoral review**

Candidates for the PhD degree must complete a committee review between the Proposal Defense and the Thesis Defense. This review will usually occur at least 6 months before the Thesis Defense and will include a presentation by the student of an outline for the completed PhD dissertation. At the review, a Pre-Doctoral Review form must be signed by the committee and returned to the graduate office.

### **8.8. Fourth-year requirements**

Every 4<sup>th</sup> year student must present a seminar to faculty and graduate students of the School as part of the Fall Graduate Colloquium.

### **8.9. The degree petition**

Candidates for the PhD degree must file with the Registrar a Petition for Degree in the semester prior to that in which graduation is expected. Any errors in this petition may delay the student's graduation until the following semester. Students who do not complete their requirements when anticipated must file a reactivation petition. This form is also due in the semester prior to the student's expected graduation date. Reactivation instructions may be obtained from the Office of the Registrar.

### **8.10. Final PhD examination**

The thesis must be submitted to the Doctoral Examination Committee **at least two weeks prior** to the date of the oral defense. In addition, the student must provide the School with an abstract, plus the date, time and place of the oral defense **two weeks prior** to the date of the defense. The examination will be conducted by the Doctoral Examination Committee chosen by the student and

the thesis advisor, and approved by the Graduate Studies Committee and the Dean of Graduate Studies. This committee will consist of at least five faculty members, including at least three from the School of Chemical & Biomolecular Engineering and at least one faculty member from another academic unit at Georgia Tech; the Thesis Advisory Committee members may also serve on the Doctoral Examination Committee. The examination will be announced throughout the School and will be open to the academic community. **The student will be required to make an oral presentation of the final thesis lasting 30-45 minutes, and this will be followed by a question and answer session.**

The student must be registered during the semester in which the final doctoral examination is given.

If both the dissertation and examination are satisfactory, and there is compliance with requirements of residency and the minor field, then the candidate will be certified as qualified to receive the degree of Doctor of Philosophy.

#### **8.11. Summary of deadlines for PhD students**

1. *Admission to the Doctoral Program:* This occurs on admission to Graduate School or following satisfactory performance in the qualifying examinations.
2. *Thesis Proposal Examination:* No later than the sixth semester of graduate study.
3. *Admission to Candidacy:* Upon completion of thesis proposal examination and approval of the thesis topic.
4. *Approval of Minor:* Coursework for the minor must be completed one semester before graduation. Students must petition the ChBE Graduate Office and Dean of Graduate Studies.
5. *Pre-Doctoral Review:* Completed during the period between the Thesis Proposal Examination and the Thesis Defense, and no less than 6 months before graduation.
6. *Fall Colloquium presentation:* Completed at the beginning of the 4th year of residence
7. *Petition for Degree:* This must be submitted to the Registrar during the semester preceding the expected graduation date.
8. *Final Doctoral Examination:* The student must be registered during the semester in which the final examination is given. Dissertation approval form must be submitted following the examination. Copy of thesis must be submitted to the Doctoral Examination Committee at least **two weeks** prior to

oral defense. Final copy must be submitted to the Graduate Division at least 15 days before graduation date.

## **9. Graduate seminars**

The Graduate Seminar courses, ChBE 8001-2, are designed to keep students informed of new developments in Chemical Engineering throughout the world. All graduate students (MS and PhD) must register for and attend seminars when in residence. Attendance at a minimum of 70 % of the seminars is required. In addition, students must complete a mandatory research methods course (ChBE 6001), during their first semester of residence.

Students should not register for the seminar in the following situations:

- a conflict exists with a course the student is taking
- a conflict exists with TA duty
- the student is defending their thesis and leaving school prior to semester finish
- the student plans to be out of town more than 30% of the semester due to research or VISA-related problems

In these situations, the student should send a notice to the faculty member in charge of the seminar course that semester, who will be listed in OSCAR for ChBE 8001 (Fall) or ChBE 8002 (Spring).

## **10. Preregistration for courses**

Students are expected to pre-register each semester for the courses they intend to take during the next semester and for appropriate research hours. For all GRAs, the number of total registered hours should be 21 hours in Spring and Fall, and 16 hours in the Summer.

*All students should consult their thesis advisor before registration.*

## **11. Multidisciplinary programs**

The School of Chemical & Biomolecular Engineering participates in several multidisciplinary programs at the MS and PhD levels. Students who pursue these programs must meet the appropriate requirements. They should also consult with the advisor of the program before deciding on a proposed program of study.

Multidisciplinary Program

Bioengineering

Computer Integrated Manufacturing Systems

Paper Science &amp; Engineering

Advisor

Dr. A. Garcia

Dr. M. J. Realff

Dr. Preet Singh

**12. The academic year**

Graduate students may take advantage of two weeks vacation and the ten Institute administrative holidays during each 12-month period of residency. Vacation and any special leave must be approved in advance by the thesis advisor.

**13. Responsible conduct of research (RCR) Training for Graduate Students**

Georgia Tech requires all new graduate students to be trained in the principles of Responsible Conduct of Research (RCR). This training must be completed in two phases, via completion of on-line CITI modules within 60 days of starting at Georgia Tech, and via “in-person training” during the first fall semester at Georgia Tech.

Phase 1: Complete the on-line CITI modules within 60 days of starting at Georgia Tech as a graduate student. Print and maintain a copy of your completion certificate in the event your name does not appear in the Institute’s CITI report.

Phase 2: Complete the degree requirements by registering and passing ChBE 6003 and ChBE 6001. If any lectures designated “RCR” in either course is missed, it must be made up by the end of February with your advisor. Your advisor will certify to the departmental compliance committee that the missed information has been addressed. If a failing grade is received in ChBE 6001, the student must retake and pass ChBE 6001.

*NOTE: Failure to meet RCR compliance may result in registration holds and loss of GRA status.*

The RCR coverage areas for “in-person” training are:

- A. Conflict of interest – personal, professional, and financial

- B. Policies regarding research with human subjects, vertebrate animals used in laboratory research, and biological, chemical and radiation safety.
- C. Mentor/mentee responsibilities and relationships
- D. Collaborative research including collaborations with industry
- E. Peer review
- F. Data acquisition and laboratory tools; data management, sharing and ownership
- G. Research misconduct and policies for handling misconduct
- H. Responsible authorship and publication
- I. The scientist as a responsible member of society, contemporary ethical issues in biomedical research, and the environmental and societal impacts of scientific research

By attending the RCR lectures presented in ChBE 6003 and 6001, you will have completed research requirements for RCR training. Academic requirements will be satisfied by receiving passing grades in ChBE 6003 and ChBE 6001. Failure to pass these courses may jeopardize graduate student status at Georgia Tech.

Additional information on RCR training can be found on the ChBE website.

#### **14. Safety**

Graduate students are required to familiarize themselves with the Environmental Health & Safety website and to abide by safety rules in the laboratory. Failure to follow safe practices could result in dismissal from the program.

It should be noted that GRAs are covered by State Workers Compensation for injuries sustained while carrying out their duties. Therefore, (as soon as is practicable after receiving any emergency treatment) your advisor and the ChBE administrative office must be informed of the injury and a report filed with the State Department of Administrative Services (DOAS) via the ChBE Facilities Office (Curtis Burnett). A report of injury must be filed via Curtis Burnett even if the injury does not require immediate medical attention.

#### **15. Computer facilities and computer use**

Graduate students will be given accounts to access all computer facilities in the School, including the student computer lab. They are reminded that all computer use in the School is subject to the Institute "acceptable computer use" policies, which can be found at <http://www.oit.gatech.edu>. In addition, the School

computer lab policies can be found at

<http://www.chbe.gatech.edu/internal/it/policies/computer-lab>.

## **16. Purchasing and Procurement**

Purchase order request forms for both internal services and external vendors can be obtained from the school's website or in ChBE administrative offices. The forms should be completed by the user with approval from the thesis advisor, indicating the estimated cost and **source of funds** (Georgia Tech project number). The request should then be forwarded to the assigned thesis advisor's administrative coordinator for processing/ordering. No student should make commitments for purchases directly with vendors. The approval of the purchase order form administered through the faculty support coordinator will generate a purchase order number which is a requirement for all orders. For equipment purchases, quotes can be obtained from vendors and attached to the purchase order request forms. The Institute's preferably method of purchasing is the use of BUZZMART. Each faculty support coordinator is authorized and trained to purchase using the system.

## **17. Travel**

All employees should ensure before entering data into the Institute's T&E system (Travel and Expense system) that they are linked to their supervisors. Once the link has been entered, then all employees will need to electronically submit a TAR (travel authority request) allowing approval to travel on Georgia Tech business and providing an Institute project number applicable to the travel. The TAR is approved by the student's advisor and then submitted to the advisor's support coordinator for processing. Once approval has been received, then the student is authorized to make the trip and claim appropriate expenses following Institute guidelines. Familiarizing yourself with the guidelines before making the trip is advisable. To file the TES (travel expense statement), the employee will claim expenses and download appropriate receipts. This process also follows the same approval channels. Please note: if changes/corrections are made, employees may have to re-certify their expenses again. Non-travel related reimbursements are handled in a similar method.

## **18. TA Service**

Each PhD or supported MS (thesis) student is expected to serve as a teaching assistant (TA) for undergraduate or graduate courses. TA service is an important

part of our educational program, as it contributes to training graduate students as academic and research. Supported M.S. students will be asked to serve 2 semesters, and Ph.D. students will be asked to serve a minimum of 3 semesters and a maximum of 4 semesters. Graduate students will not be asked to serve as a TA during their first or last semester at Georgia Tech.

## **19. Forms**

Required forms can be found at: <http://www.chbe.gatech.edu/graduate/forms>.

## **20. Health Problems, Stress, and Major Life Events**

During graduate school some students may experience health problems (sickness, injury, mental health, etc.), legal problems, or upsetting major life events, such as the death of a family member. In addition, some students find that they are unable to cope effectively with the stresses they encounter while in graduate school. Students in these situations are encouraged to take advantage of on- or off-campus resources for managing either general stress or specific problems. The following is a short list of some available resources for graduate students:

Counseling Center [www.counseling.gatech.edu](http://www.counseling.gatech.edu) 404-894-2575

Professional counselors are available to consult confidentially with students about any issue, whether personal or school-related.

Dean of Students [www.deanofstudents.gatech.edu](http://www.deanofstudents.gatech.edu) 404-894-6367

The Dean of Students office advocates for students in handling missed classes and making up work due to sickness, injury, and other adversities. If you experience a problem that interferes with classes for more than a few days, you should contact the Dean of Students office for advice and assistance.

National Graduate Crisis Line *1-800-GRAD-HLP* (800-472-3457)

An off-campus, non-profit center for graduate students in crisis that is available 24/7.

In a small number of cases a health problem or life event may be so significant that it prevents a student from making progress in classes or research. In these extreme cases it may make sense to consider a leave of absence, and students should discuss the situation candidly with their

advisor, the ChBE Associate Chair for Graduate Studies, and/or the Dean of Students office.

## **21. Internships**

Students are encouraged to take advantage of internship opportunities. Planning for an internship must be done in consultation with your research advisor. In addition, students should register as a co-op on work assignment during the term(s) that they are away at their internship. The procedures for registering with the co-op office can be found at [www.grad.gatech.edu](http://www.grad.gatech.edu). Students should plan internships to start and end in concurrence with either Fall, Spring or Summer terms' starting and ending dates. If a student starts or ends an internship after a semester has started, it is generally not possible to pay the student as a GRA during that semester. Thus, it is very important to plan internships in advance and make every effort to have them coincide with the semester start and end dates.