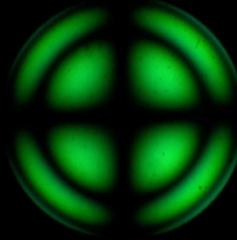
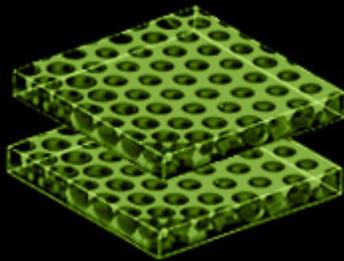


Polymer, Textile & Fiber Engineering
Georgia Institute of Technology

Graduate Student Handbook

2010-2011



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

POLYMER

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IMPORTANT NOTICE

As of July 1, 2010, the schools of PTFE and MSE have merged and become the School of Materials Science and Engineering (MSE). Although the school operates as a single entity, all graduate students who are currently in or have entered into the PTFE graduate program by Spring 2011 will need to comply with the guidelines as laid out in the following 'PTFE Graduate Handbook'.

Any student who wishes to move to a different graduate program (and this includes the MSE program) will have to apply through the normal routes as an 'external' candidate.

A. INTRODUCTION

The purpose of this Handbook is to acquaint all graduate students with the regulations and procedures in the PhD program in Polymer, Textile & Fiber Engineering (PTFE). The general rules and regulations governing all graduate students at Georgia Tech (GT) are contained in the Georgia Tech General Catalog, particularly in the section entitled "Information for Graduate Students". **All PTFE graduate students must carefully read and become familiar with both the Georgia Tech General Catalog and the PTFE Graduate Handbook.** The PTFE handbook should be viewed as a supplement to the material in the General Catalog. Although some portions of the material in the General Catalog will be repeated here, this handbook is not a substitute for the GT Catalog or the GT Graduate Office website.

Graduate students should consult their advisors or the School Office for Graduate Studies & Research for further information regarding curricula, research areas, and other program-related matters. The School Office for Graduate Studies & Research should also be consulted regarding financial assistance, assistantships, fellowships, tuition waivers, etc. The necessary forms for handling matters such as dropping courses, proposed and approved programs of study, petitions for degree, etc., can be obtained from the PTFE main office or online at <http://www.gradadmiss.gatech.edu/thesis/forms.php>.

Other general sources of information for PTFE graduate students include the following:

- MSE School Web Site at <http://www.mse.gatech.edu/>
- PTFE Graduate Brochure
- A booklet describing the various inter-disciplinary certificate programs available in the Office of the Dean of Engineering
- Graduate Student Orientation Handbook (published by the Graduate Student Senate)
- Manual for Graduate Theses (published by the Graduate Studies and Research Office)
- OSCAR, listing all classes to be offered in the following semesters, also containing registration instructions (<https://oscar.gatech.edu/>)
- Information specific for international students available in the Office of International Education (<http://www.oie.gatech.edu/>)

For more information regarding the PTFE graduate program, please contact the Graduate Administrative Coordinator or the Graduate Committee Chair:

Ms. Patricia Glore
Graduate Administrative Coordinator
School of Materials Science and Eng.
Georgia Institute of Technology
801 Ferst Drive
Atlanta, GA 30332-0245
Phone: 404-894-2493 or 800-533-7815 (Toll Free)
Fax: 404-894-8780
Email: grad-program@ptfe.gatech.edu

Dr. David Bucknall
Graduate Committee Co-Chair
School of Materials Science and Eng.
Georgia Institute of Technology
801 Ferst Drive
Atlanta, GA 30332-0295
Phone: 404-894-2535
Fax: 404-894-8780
Email: bucknall@gatech.edu

B. GRADUATE PROGRAM OVERVIEW

The PTFE graduate program is broadly focused in polymer research primarily at the Ph.D. level. However, a limited number of admissions are also granted to students wishing to pursue M.S. degrees. The PTFE School dates back over a hundred years, the graduate program is fairly young and evolving, and is rapidly establishing itself as one of the leading research and education programs in Polymer Science and Engineering in the world. PTFE graduates are hired by the leading companies, government laboratories, as well as academic institutions in the world.



The joint MSE School has over 55 faculty, with approximately 17 full time faculty members who specialize in polymers. There are also 65 students in the PTFE PhD program. Students with a B.S. or M.S. degree in Polymer Science and Engineering, Chemical Engineering, Materials Science and Engineering, Mechanical Engineering, Textile Engineering, Chemistry, Biomedical Engineering, Biology, Physics, or in a related field of science and engineering can be admitted in the Ph.D. program. Ph.D. admissions are generally granted with financial assistance in the form of graduate assistantships.

The PTFE faculty has diverse expertise in the field of polymers that relates to Polymer Science and Engineering, Materials Science and Engineering, Chemical Engineering, Mechanical Engineering, Textile Engineering, Chemistry and Physics. The PTFE students, research scientists, and faculty are engaged in research in the following areas:

- Advanced Polymer Characterization Techniques
- Biomedical Applications of Polymers
- Functional Polymers and Systems
- Modeling and Simulation
- Nano Structured Polymers and Nanocomposites
- Polymer Processing (including Micro and Nano Fabrication)

- Polymer Structure and Properties
- Polymer Synthesis and Characterization
- Sustainability and Polymer Recycling

C. Ph.D. DEGREE PROGRAMS

The School of Materials Science and Engineering offers a program of study and research leading to the Doctor of Philosophy degree. The Ph.D. degree recognizes demonstrated proficiency and high achievement in research. Students in the Ph.D. program pursue an individually structured study plan culminating in a dissertation that makes an original and substantial contribution to the fundamental knowledge in the field of study.

C.1. REQUIREMENTS FOR THE Ph.D. CANDIDACY

The requirements for the Ph. D. candidacy are outlined below:

C.1.1. Placement Mechanism (administered by the School Graduate Committee)

Based on student records and an initial interview (within the first week of arrival), the ‘major’ course work requirements for an incoming graduate student will be chosen. The majority of incoming students will be expected to follow the normal ‘polymer degree track’, although in exceptional cases the ‘undesigned degree track’ can be chosen.

A student will be exempted from those courses for which he/she can prove to have suitable qualifications, for example, a Master’s course in polymers. Any students without a sufficient subject background for their chosen track will be advised by the School Graduate Committee on pre-requisite classes that must be taken.

C.1.2. Major Course Work

a) Polymer track

‘Major’ course work is spread over 3 key areas (Chemistry, Physics and Engineering), from which students have to take 6 out of the 7 courses, and maintain at least a 3.0 GPA over those courses. For students with course exemptions the choice will be restricted to only those subjects specified by the School Graduate Committee. For instance, if a student has an MS degree in Polymer Chemistry and was exempted from PTFE 6750 and PTFE 6751 then he/she would only take 4 of 5 courses out of the Eng and Phys segments of the course work.

The following represent the core 7 courses:

Course Number	Course Name	Area
PTFE6750	Preparation and Reactions of Polymers	Chemistry

PTFE6751	Physical Chemistry of Polymers in Solutions	Chemistry
PTFE6752	Polymer Characterization	Physics
PTFE6755 or CHEM6481	Theoretical Chemistry of Polymers ¹ / Statistical Mechanics ²	Physics
PTFE6768	Polymer Structure, Physical Properties and Characterization	Physics
PTFE7771	Mechanics of Polymer Solids and Fluids	Engineering
PTFE8803	Advanced Polymer Processing	Engineering

b) Undesignated track

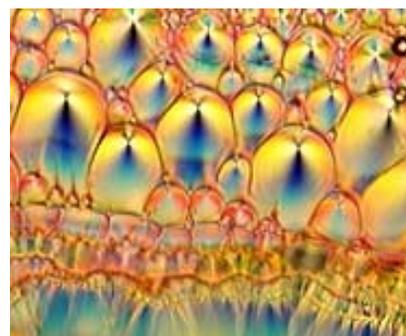
‘Major’ courses for this track can be chosen by the thesis advisor, but must be approved by the School Graduate Committee. As for the ‘polymer track’ 6 out of 7 courses must be taken from three related subject areas, and a 3.0 GPA or greater should be maintained.

C.1.3. Minor Course Work

GT requires course work of 9 hours for ‘minors’. Minor course work should be completed in a field other than the major field. Although the student need not complete the minor as a prerequisite for admission to candidacy, the minor must be completed and approved in order to be cleared for graduation.

C.1.4. Scientific Paper Presentation

In the first year of study, each student is required to give a 15 minute graded presentation of a scientific paper of his/her choice (selected in consultation with the advisor) to the faculty and graduate students of the PTFE School. These presentations are scheduled on evenings during the second week of January. The attending faculty members will grade the presentations and a minimum grade of ‘B’ must be attained. The grade will be made up of contributions from the scientific as well as language capabilities demonstrated.



Any deficiencies in language skills would be reviewed and recommendations given for improvement. Any student attaining a grade of less than ‘B’ will deem to have failed and will be required to re-do the presentation to the PTFE Graduate Committee later in the year.

C.1.5. Comprehensive Exam

¹ PTFE6755 is generally offered every alternate year.

² PTFE6481 is generally offered every alternate year.

All full-time Ph.D. students enrolled in the Fall semester without any course deficiency are required to take the Comprehensive Exam scheduled on a day in the early summer of the first year (at end of May). Candidates will be given a set of research literature 3 weeks before the Comprehensive Exam. A single 3-hour written exam will be based on the supplied research papers, and will require answering 6 questions. The exam will test the ability to read, understand and critically analyze the supplied research papers, but will require knowledge of the core courses. Candidates are not allowed to discuss these research papers with any faculty members.

Students who fail this Comprehensive Exam will be offered a repeat examination scheduled sometime in mid August of the same year on a new set of supplied literature. In total, only 2 chances will be allowed to pass the Comprehensive Exam.

Students admitted in the Ph.D. program with course deficiency may be given two years to complete the Comprehensive Exam. The two-year decision will be communicated in writing to the student by the PTFE Graduate Committee based on the placement interview (see C.1.1.).

C.1.6. School Seminar

A full presentation (45 minutes) of research related work must be given to the PTFE School before the end of the second year. The seminar presentations will be graded by the attending faculty members and feedback given to the students. These seminars would be part of the GRADUATE STUDENT SEMINAR series (refer to Item 6 in Section F.1).

C.1.7. Dissertation Proposal

The dissertation proposal defense must be held within 12 months after the student has passed the Ph.D. Comprehensive Exam. The proposal should clearly identify the topic, the need of the research, the related literature, the objectives of the proposed research, and the theoretical and/or experimental approaches that the student proposes to take for achieving the objectives. The dissertation proposal must give promise of being a genuine addition to the fundamental knowledge in the field or a new and better interpretation of facts already known. The length of this proposal document is typically about 20 pages of text (double spaced) plus tables and figures. After an editorial review by the advisor, the proposal will be distributed to the other committee members. No less than two weeks following distribution of the proposal, the student will make a presentation of the proposed research effort to the Advisory Committee as a whole. **Written notice of this oral presentation clearly stating topic, time, date and place MUST be given to the School populace at least one week before the presentation.** After the successful defense of the proposal, a completed Thesis Topic Form approved by the Dissertation Committee must be submitted to the School Office for Graduate Studies & Research. This form is available on the GT Graduate Office website.

After completing all course requirements, achieving a satisfactory scholastic record (at least 3.0 GPA), passing the Ph.D. Comprehensive Exam, defending the dissertation proposal, and receiving approval of the dissertation topic, the GT Office of Graduate Studies and Research will formally admit the student to candidacy for the Ph.D. degree.

C.2. DISSERTATION ADVISOR AND DISSERTATION COMMITTEE

Ph.D. dissertation advisor must be selected by the end of the eighth week during the first semester in residence. Each new student is required to discuss thesis research interests with several members of the faculty in the School. **Failure to meet this deadline may result in suspension of financial aid.** The student, in consultation with the advisor, will recommend to the School Office for Graduate Studies & Research a Dissertation Committee. The Dissertation Committee is chaired by the dissertation advisor and will consist of at least five members, two of whom are generally (at least one is required) from Schools outside the student's major School. The composition of the Dissertation Committee must meet all the requirements for **both** the Ph.D. Thesis Advisory Committee and the Final Doctoral Examination Committee, as stated in the Georgia Tech's Policy on the Advisement of Graduate Student Research and the Appointment of Thesis Advisory Committees³. The Dissertation Committee must be approved by the School Chair, the PTFE Office for Graduate Studies & Research and the Georgia Tech Office of Graduate Studies and Research. The Dissertation Committee assists the student in planning an appropriate program of study, approves the research topic, provides advice and guidance during the research and is charged with approving the dissertation when the research is completed.

C.3. DISSERTATION RESEARCH GRADING AND REQUIREMENTS

³ There are two committees which function to advise, approve and conduct the final doctoral oral examination of the thesis and the student's knowledge of the field in which it lies. (Cont'd.....)

(.....Cont'd)

The first committee is called the Thesis Advisory Committee or the Thesis Reading Committee and consists of at least three persons, one of whom is the Thesis Advisor. This committee approves the research topic, provides advice and guidance during the research and is charged with approving the thesis when the research is completed and presented as the doctoral thesis. When the Thesis Advisory Committee considers the thesis to be satisfactory, a recommendation is made to the Dean of the Graduate Division for the appointment of the second committee, which is called the Final Doctoral Examination Committee, and it consists of at least five individuals.

The Thesis Advisory Committee consists of at least three members satisfying the following: (1) the thesis advisor shall be a member of the Academic Faculty (with approval of the school or college Graduate Committee, an adjunct* faculty member appointed for the specific purpose of advising graduate students may serve as the thesis advisor); (2) the majority of committee members shall be members of the Academic Faculty. The Committee is approved by the Graduate Committee of the School of College, recommended by the School Director through the College Dean, and appointed by the Dean of the Graduate Division.

The Final Doctoral Examination Committee, which consists of at least five persons, always contains the Thesis Advisory Committee members and others as appropriate, who are recommended by the school or college to the Dean of the Graduate Division for approval. At least one member of the Final Doctoral Examination Committee must be from the academic faculty of a School (or College) which is distinct from the unit in which the student is enrolled.

It is recognized that some Schools and Colleges may wish to appoint a Thesis Advisory Committee which consists of five or more persons and to recommend this committee to serve as the Final Doctoral Examination Committee. Where the constraints outlined above are met for both committees, this is permissible. (http://www.gradadmiss.gatech.edu/thesis/policies/advisory_committee.pdf)

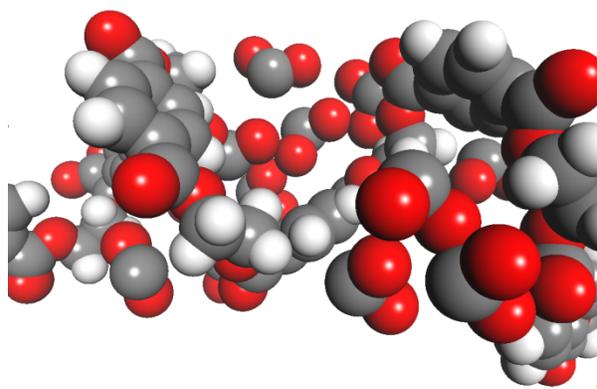
* - "adjunct" does not indicate formal appointment, but rather appointment as indicated in this policy statement.

All thesis hours are graded on a Pass/Fail basis (S or U). If the progress on the dissertation research of a student is considered unsatisfactory by his/her dissertation advisor, the student will receive a grade of "U" for the term. This grade will appear on the student's transcript and be permanent. **A "U" grade for dissertation research is cause for termination of financial aid; a "U" grade can also jeopardize the visa status of international students.**

All Ph.D. students must register for PTFE 9000 at the time of beginning the research and continue to do so each term until the dissertation is completed. The hours of research for which a student registers each term must be consistent with a realistic appraisal of the amount of work yet to be done on the dissertation and the amount of faculty time required.

C.4. DISSERTATION DEFENSE

At the conclusion of the research, the student will prepare a dissertation which meets the criteria published by the GT Office of Graduate Studies and Research at www.gradadmiss.gatech.edu. The Dissertation Committee will review the dissertation and, if the committee deems it satisfactory, will schedule the candidate for an oral examination on the subject matter of the dissertation and the field in which it lies. It is the responsibility of the student to carefully check the grammar, spelling, and sentence structure of the thesis before submitting it to the Dissertation Committee for review. The Dissertation Committee reserves the right of asking the student to have the dissertation corrected by a professional proof reading/editing service, for which the student is financially responsible for the cost.



The Dissertation Committee will officially conduct the dissertation defense. If a candidate should fail to pass the final oral defense, the Dissertation Committee may recommend permission for one additional dissertation defense to the Office of Graduate Studies and Research.

Every student must orally present his/her research to the Dissertation Committee, other interested faculty and fellow graduate students prior to graduation. A draft of the dissertation, approved by the major Dissertation Advisor, **must be given to the Dissertation Committee at least two weeks before this presentation. Written notice of the oral dissertation defense clearly stating topic, time, date and place MUST be given to the School populace at least two weeks before the presentation.** Additionally, a Ph.D. dissertation defense notice should be sent to the Office of Graduate Studies and Research at least two weeks prior to the oral examination.

The participating faculty and students will be permitted to ask questions during the oral presentation. At the conclusion of the presentation, the members of the Dissertation Committee will decide whether the student's dissertation is acceptable. To help insure that the student is making satisfactory progress on his/her dissertation, the student **is encouraged to discuss his/her research with all the members of the Dissertation Committee periodically, and to**

hold a major review three months before the anticipated defense.

A typed draft of the dissertation approved by the Dissertation Committee and the School Chair must be approved by the Assistant to the Dean of the Graduate Division before preparation of the final dissertation document. The draft dissertation must be submitted for approval about 4 weeks prior to graduation (the actual dates are posted on the GT Graduate Office website.). Upon approval, the dissertation may be prepared for final submission and duplication.

The final submission of the Ph.D. dissertation must be made by the deadline established by the Graduate Office (<http://www.grad.gatech.edu/thesis/thesisdeadlines.html>). Georgia Tech requires that the thesis be submitted electronically. For guideline and instructions, please visit

http://www.grad.gatech.edu/thesis/electronic_submission.html
<http://etd.gatech.edu/>

Costs associated with the preparation of the dissertation will be the student's responsibility. The PTFE School library shall be given two bound copies. The student should also check with the Dissertation Committee if additional bound copies are needed (e.g. one copy for each committee member).

If both the dissertation and the oral defense are satisfactory and the candidate has completed the requirements of residence, minor field and any additional program requirements, the Office of Graduate Studies and Research will certify the candidate as qualified to receive the appropriate Ph.D. degree with a major in Polymer, Textile & Fiber Engineering.

In addition, there are a number of requirements imposed by the Institute. These include:

GPA Requirement	3.0
Minimum Full-time enrollment in residence	2 semesters
Qualifying/Comprehensive Exam required	Yes
Time limit for completion of degree after admission to candidacy (Max)	7 years
Prior approval of dissertation topic	Yes
Public defense of dissertation	Yes

D. MASTER'S DEGREE PROGRAMS

Within the School of Material Science & Engineering is offered a program leading to a Master of Science degree with a major in Polymer, Textile & Fiber Engineering and a Master of Science in Polymers degree.

D.1 MASTER OF SCIENCE

Students with a bachelor's degree in engineering, chemistry or science may be accepted into the M.S. program.

D.2. COURSE REQUIREMENTS

Students in the M.S. program may take the thesis option or non-thesis option. The general requirements are:

Master of Science With Thesis	h	Master of Science Without Thesis	h
Course Work (Letter Grade) Courses offered by PTFE and approved courses offered by other schools at 6000 or above level subject to a maximum of 6 hours at the 4000 level.	21	Course Work (Letter Grade) Courses offered by PTFE and approved courses offered by other schools at 6000 or above level subject to a maximum of 6 hours at the 4000 level.	27
Thesis	9	Special Problem (Pass/Fail)	3
TOTALS	30		30

The graduate student will work with the Faculty Advisor to develop a Program of Study consistent with the student's educational objectives and the School's mission and submit it to the School Office for Graduate Studies & Research by the end of the first semester in residence for review and approval.

Because graduate degrees are research oriented, once a student obtains financial support as a GRA, the only option available to him/her is to complete a thesis. Students receiving funding for more than 1 semester will not be permitted to change to the non-thesis degree option.

D.3. MASTER OF SCIENCE IN POLYMERS

In order to qualify for the Master of Science in Polymers degree, a student's undergraduate program must have included a B.S. in science or engineering and a demonstrated ability in fluid flow and heat transfer (equivalent to PTFE 3210 as a minimum). The student should have had undergraduate Polymer Science and Engineering courses (equivalent to CHE/PTFE 4775 and 4776), and also undergraduate chemistry, physics, math and material science courses (equivalent to CHEM 1312, PHYS 2212, MATH 2403 and MSE 2001). The student should also have demonstrated abilities in physical and organic chemistry. Deficiencies can be made up by taking for credit the necessary courses as early in the study program as the courses can be scheduled. However, these course hours cannot be used to meet the M.S. in Polymers degree credit hour requirements.

A thesis is required for all the students pursuing the Master of Science in Polymers degree.

D.4. COURSE REQUIREMENTS FOR M.S. (POLYMERS)

Polymer Materials Science Track	h	Polymer Chemistry Track	h
Polymer Structure, Physical Properties and Characterization (PTFE 6768)	3	Preparation and Reaction of Polymers (PTFE 6750)	3
Mechanics of Polymer Solids and	3	Physical Chemistry of Polymer Solutions	3

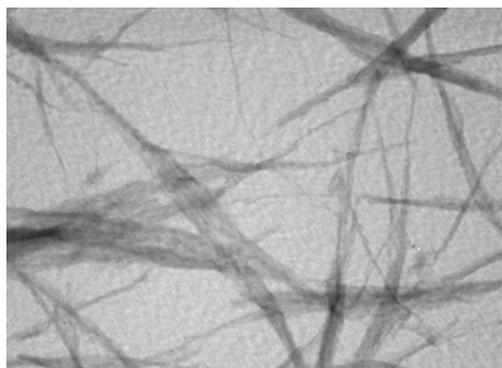
Fluids (PTFE 7771)		(PTFE 6751)	
Physical Chemistry of Polymer Solutions (PTFE 6751)	3	Polymer Characterization (PTFE 6752)	4
Theoretical Chemistry of Polymers (PTFE 6755)	3	Theoretical Chemistry of Polymers (PTFE 6755) (tentative)	3
Polymer Characterization (PTFE 6752)	4	Organic Chemistry (CHEM 6372, 6373) or Physical Chemistry (CHEM 6471, 6481) or Analytical Chemistry I and II (CHEM 6271, 6272) or Biochemistry I and II (CHEM 6501, 6502)	6
Safety & Ethics (PTFE 6998)	1	Safety & Ethics (PTFE 6998)	1
Electives: approved by School of residence at 4000 level or above*	6	Electives: approved by School of residence at 4000 level or above ⁴	3
Thesis	9	Thesis	9
TOTALS:	32		32

D.5. FIVE-YEAR BS-MS PROGRAM

Current undergraduate students may participate in the Five-Year BS-MS Program offered by the School. The Five-Year BS-MS Program allows eligible students to use up to six credit hours of graduate-level course work in the major discipline for both degrees. Georgia Tech undergraduate students may be admitted into the program upon completion of 30 semester credit hours at Georgia Tech and attaining a GPA of 3.5 or higher. Both the application fee and the GRE test score are waived. Students need to maintain at least a 3.0 GPA when receiving the B.S. degree in order to be converted into graduate student status and to qualify for the 6 semester-hour “Graduate Course” option.

D.6. DEGREE SPECIFICATION

Generally, the student will be informed, at the time of admission, the degree program (M.S. or M.S. in Polymers) to which the student has been admitted.



D.7. PROGRAM OF COURSE STUDY

In consultation with his/her faculty advisor, the student should prepare a tentative schedule for a complete M.S. study program during his/her first term in Graduate School, including the selection of thesis/non-thesis option (MS degree only; thesis is required for MS-Polymers). The form to be used can be obtained in the PTFE main office. The student needs to complete the Proposed Program of Study form, approved by his/her advisor and submit it before registration for his/her second term of study to the PTFE Office for Graduate Studies & Research.

⁴ Up to 3 hours of elective courses may be taken on a Pass/Fail basis. Other courses (excluding thesis) must be taken on a Letter Grade basis.

D.8. M.S. THESIS TOPIC SELECTION

For thesis degree candidates, the thesis advisor must be selected and approved by the end of the eighth week during the first semester in residence. Each M.S. candidate is required to discuss thesis research interests with several members of the PTFE program faculty. **For a student financially supported by the School, failure to meet this deadline may result in suspension of financial aid.** The student and his/her thesis advisor will recommend to the School Office for Graduate Studies & Research a Thesis Committee consisting of at least three members. One member of the Thesis Committee can be from outside the School. The composition of the Thesis Committee must meet all the requirements for the MS Thesis Advisory Committee, as stated in the Georgia Tech's Policy on Advisement of Graduate Student Research and Appointment of Thesis Advisory Committees⁵. Finalization of the Thesis Committee and approval of the thesis topic must be completed by the fourth week of the second term in residence. The Thesis Topic Form must be approved by the Thesis Committee.

All non-thesis degree candidates take a three credit hour, graduate-level Special Problems (PTFE 8900-1) on a Pass/Fail basis. A final Technical Report approved by three faculty members is required. *Only three* (3) credit hours of PTFE 8900-1 may be applied toward the institute minimum of 30 credit hours required for the M.S. degree.

No core courses used for graduate credit may be taken on a Pass/Fail basis. However, up to three credit hours of elective course work may be taken Pass/Fail, and applied toward the degree hour requirements.

D.9. THESIS RESEARCH GRADING

All thesis hours are graded on a Pass/Fail basis (S or U). If the progress on his/her thesis research is considered unsatisfactory by the thesis advisor, the student will receive a grade of "U" for the term. This grade will appear on the student's transcript and be permanent. **A "U" grade for thesis research is cause for termination of financial aid; a "U" grade can also jeopardize the visa status of international students.**

Those M.S. students following thesis degree paths must register for PTFE 7000 at the time of beginning the research and continue to do so each term until the thesis is completed. The hours of research for which the student registers each term must be consistent with a realistic appraisal of the amount of work yet to be done on the thesis and the amount of faculty time required.

D.10. THESIS DEFENSE

⁵ For Master's Thesis advisement, the Thesis Advisory Committee consists of at least three members, the majority of whom must be members of the Academic Faculty. The thesis advisor who serves as the Chairman of the Thesis Advisory Committee must be a member of the Academic Faculty (with approval of the school or college Graduate Committee, an adjunct* faculty member appointed by the specific purpose of advising graduate students may serve as the thesis advisor.) The committee is recommended by the School Director through the College Dean and appointed by the Dean of the Graduate Division. (http://www.grad.gatech.edu/admin/advise_policy.html)

* - "adjunct" does not indicate formal appointment, but rather appointment as indicated in this policy statement.

At the conclusion of the proposed research, the student shall prepare a thesis that meets the criteria (available from the web at (<http://www.gradadmiss.gatech.edu/thesis/ThesisManual-SEPT-2009.pdf>))

The Thesis Committee will review the thesis and, if the committee deems it satisfactory, will schedule the candidate for an oral examination on the subject matter for the thesis and the field in which it lies. The student should give the Thesis Committee at least two weeks to read the thesis document.

Payment for the typing and printing of the thesis copies will be the student's financial responsibility. The School library shall receive two bound copies and each member of the Thesis Committee shall receive at least one bound copy.

Every student must orally present his/her research to the Thesis Committee, other interested faculty and fellow graduate students prior to graduation. The Thesis Committee will officially conduct the thesis defense. If a candidate fails to pass the final oral defense, the Thesis Committee may recommend permission for one additional thesis defense to the Office of Graduate Studies and Research.

To help ensure that the thesis will be accepted by the Thesis Committee, the student is encouraged to discuss his/her progress with all members of the committee frequently.

If both the thesis and the oral defense are satisfactory and the candidate has completed the course requirements, and any additional school requirements, the Office of Graduate Studies and Research will certify the candidate as qualified to receive the appropriate Master of Science degree.



D.11. FINAL SUBMISSION OF THESIS

The final submission of the Master's thesis must be made by the deadline established by the Graduate Office (<http://www.gradadmiss.gatech.edu/thesis/thesisdeadlines.php>). Georgia Tech requires that the thesis be submitted electronically. For guideline and instructions, please visit <http://www.gradadmiss.gatech.edu/thesis/thesisdeadlines.php> and <http://etd.gatech.edu/>

D.12. SPECIAL PROBLEMS REQUIREMENTS & GUIDELINES

All non-thesis M.S. degree candidates take a three-hour credit, graduate-level Special Problem (PTFE 8900-1 taken on a Pass/Fail basis). A final Technical Report is required. Before a final grade can be assigned the following must be satisfied:

- a) Only those students pursuing the Non-thesis M.S. degree will be allowed to sign up for PTFE 8900-1 Special Problem hours. All others should sign up for thesis hours (PTFE 7000) to satisfy their degree research requirements.
- b) Only *three* (3) credit hours of PTFE 8900-1 may be applied toward the Institute minimum of 30 credit hours required for the Non-thesis M.S. degree.
- c) The student must register for PTFE 8900-1 on a Pass/Fail basis. Thus the student cannot count any regular course taken as Pass/Fail toward graduation because of the 3-hour maximum allowed for Pass/Fail courses.
- d) During the first week of the term in which a student begins the Special Problem research with guidance from a principal advisor, two additional committee members will be chosen by the principal advisor; the principal advisor will also chair the three-person committee. The committee will monitor the progress of the research throughout the term(s) in which it is conducted, and evaluate the quality and adequacy of the research and the final report.
- e) **It is the responsibility of the student to keep the principal advisor and the committee informed about the progress of the research. The student should schedule regular discussions with the principal advisor and the committee.**
- f) The signatures of all three committee members are required on the final report, and a signed copy must be submitted to the PTFE Main Office before the grade (assigned by the principal advisor) can be submitted to the Registrar's office.
- g) If the Special Problem is being completed during the term the student is planning to graduate, the final report must be submitted to the committee at least two (2) weeks before the Registrar's deadline for grade submission (normally Friday of the week before Finals). Failure to do so may jeopardize the student's graduation date. The approved report must be submitted by the last day of classes for students not graduating that term.

D.14. PETITION FOR A DEGREE

The Degree Petition form must be completed and filed with the Registrar's Office during *the preceding term* of the expected term of graduation. The deadline for filing the Degree Petition and Approved Program of Study is normally the Wednesday of the midterm week (see <http://www.gradadmiss.gatech.edu/thesis/thesisdeadlines.php>).

The Degree Petition form can be obtained online at

Always pre-register for the following term until such time as you have been certified for the degree. The best-laid plans sometimes fail! If you do not complete your thesis on schedule, your petition for graduation must be reactivated.

D.15. GRADUATE RESIDENCY PROGRAM

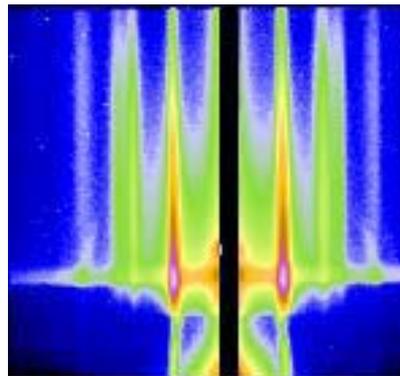
Those students chosen to participate in the residency program at the M.S. level must spend their first two terms at Tech. If the thesis option is selected, the project is to be supervised jointly by a Polymer, Textile & Fiber Engineering faculty member (i.e., thesis advisor) and an agreed upon company representative. The maximum time allowed for M.S. degree completion is 6 years.

E. CLASSIFICATION OF GRADUATE STUDENTS

Graduate students are classified according to their graduate standing (i.e., full graduate standing, conditional graduate standing, and special graduate standing) and according to their course workload (i.e., full-time and part-time). These different classifications and what they imply are discussed below.

E.1. CLASSIFICATION ACCORDING TO GRADUATE STANDING

- a) Full Graduate Standing - Students who satisfy the entrance requirements (see General Catalog) as judged by the Chair of the School and the School Graduate Committee, the Registrar, and the Dean of Graduate Studies and Research are admitted to full graduate standing for study toward an M.S. or Ph.D. degree.
- b) Conditional Graduate Standing - Students who do not meet the requirements for full graduate standing may be admitted for study toward a graduate degree on conditional graduate standing. Students whose academic backgrounds do not satisfy the prerequisites for a degree program will be expected to take a number of courses to make up for this deficiency. Such courses will not count toward a graduate degree. In general, the student will be expected to demonstrate an ability to do effective work (grade point average of at least 2.7) before his or her classification is changed from conditional to full graduate standing. This change of classification requires the recommendation of the PTFE Graduate Committee and the approval of the Chair of PTFE. Courses passed by a student while on conditional standing can be counted toward a degree program upon the recommendation of the School Graduate Committee to the School Chair.
- c) Special Graduate Standing - A student who wishes to enroll for course work but not to pursue a program of study for a graduate degree can be admitted as a special graduate student upon approval by the School Chair (upon recommendation by the PTFE Graduate



Committee), the Registrar, and the Dean of the Division of Graduate Studies. Courses taken by students on special standing cannot be counted toward a graduate degree.

E.2. CLASSIFICATION ACCORDING TO COURSE WORKLOAD

Graduate students are classified as full-time or part-time depending upon the number of hours of course work taken in a given term. Course work includes regularly scheduled courses, seminars, special problem courses, and thesis research (that is, any activity carrying a course number, whether or not these carry graduate credit or are taken on an audit basis). A full-time student must register for at least 12 hours per term, excluding audit, with a maximum of 21 hours. Exceptions to the maximum load of 21 hours must have the approval of the School Chair and the Dean of Graduate Studies. A part-time student will register for not more than 11 and not less than 3 credit hours.

E.3. COURSE LOAD REQUIREMENT

The following regulations govern the term workloads of students who are pursuing graduate degrees:

1. Full-time students must be enrolled **for at least 12 hours**, excluding audit.
2. The maximum course load for all students is **21 hours**.
3. The minimum load for part-time students is **three hours**.
4. Students with fellowships, traineeships, or tuition waivers, and those assigned to the Institute by the Armed Forces for the purpose of pursuing a degree are required to be enrolled for at least **12 credit hours, excluding audit**.
5. **The minimum load for foreign students on visas is 12 hours per academic term, excluding audit, with the possible exception of the Summer term.** After at least two consecutive semesters of full-time enrollment, students on F-1 or J-1 visas may be eligible to reduced number of hours. For detailed advice, please contact the Office of International Education.
6. Students in the Graduate Cooperative Program are required to carry a full-time load during study terms.
7. Full-time students working on thesis/dissertation research can register for 18 or more thesis hours (PTFE 7000 or 9000, as appropriate) during Fall and Spring semester and up to 16 hours during summer.
8. *The student must register during Phase I of registration.*
9. GRA and GTA must enroll for a minimum of 12 credit hours on a Letter Grade or Pass/Fail basis. One



3-hour Letter Grade or Pass/Fail course may be taken on an audit basis with the permission of the advisor, PTFE Chair and the Graduate Committee, exclusive of any GRA/GTA audit hours.

10. *Graduate students must take all PTFE Courses counting toward the degree requirements on a Letter Grade basis.*

11. The maximum allowable term load for employed students other than graduate assistants (GRA/GTA) is reduced based on the number of hours employed per week as shown below:

E.4. ALLOWABLE COURSE LOAD IF EMPLOYED

Students who are employed (on or off campus) are limited in the amount of course work they may take per term as shown below.

Hourly Employment Load Per Week (On or Off Campus)	Maximum Course Load Allowed (Credit Hours)
Full-Time (40 hours)	6
3/4 of Full-Time (30 hours)	9
2/3 of Full-Time (27 hours)	10
1/2 of Full-Time (20 hours)	12
1/3 of Full-Time (13 hours)	15
1/4 of Full-Time (10 hours)	18

These limitations can be overridden in a given term with the approval of the student's Graduate Advisor provided the average course load for the student's program does not exceed the figures shown. Exceptions to these maximum loads maybe made by the Dean of the Graduate Division with approval of the School Chair.

F. REGISTRATION INFORMATION

F.1. PTFE GRADUATE REGISTRATION POLICIES & GUIDELINES

1. All incoming graduate students in the PTFE graduate programs are required to take the Safety course (PTFE 6998) on a **Letter Grade** basis in the first Fall semester of their graduate program. This course counts toward the following requirements:
 - a. Hours in Major/Basic Field of Knowledge
 - b. Course Hours at 6000 level or higher
2. Graduate students pursuing M.S. in Polymers should register for TEXTILE/POLYMER

CALCULATIONS (normally offered as a special topic course, PTFE 8xxx) in the first Fall semester of their graduate program. Incoming students in other degree programs (M.S. and Ph.D.) should also consider taking this course if needed. This course counts toward the following requirements:

- a. Hours in Major/Basic Field of Knowledge
 - b. Course Hours at 6000 level or higher
3. Incoming graduate students pursuing graduate degrees in Polymers who do not have the undergraduate prerequisite heat/mass transfer background are required to make up the deficiency. They are strongly advised to register for PTFE 3210 (Fundamentals of Transport in Polymer and Fiber Processes and Structures) in the first Fall semester of their graduate program.
 4. Incoming graduate students pursuing a Polymers degree (M.S. or Ph.D.) who do not have the undergraduate prerequisite introductory materials science course MSE 2001 may take it during the first Fall semester of their graduate program or during a later semester.
 5. Graduate students pursuing a Polymers degree (M.S. or Ph.D.) who do not have the undergraduate prerequisite courses PTFE 4775 (Polymer Science & Engineering I) and PTFE 4776 (Polymer Science & Engineering II) should register for these courses in the first Fall semester of their graduate program. It is strongly advised that these courses be taken in the Fall and not in the Spring semester because these courses are prerequisite courses to the graduate polymer course sequence beginning Spring semester.
 6. All graduate students are required to register on a Pass/Fail basis for THE SCHOOL SEMINAR series for as long as they are registered at Georgia Tech, except for Summer semester(s). At least eighty percent attendance will be required to obtain a passing grade in the School seminar series. All first and second year graduate students will also be required to sign up for the GRADUATE STUDENT SEMINAR series. During the second year each graduate student will be required to give a 45-minute seminar in the graduate student seminar series. Students planning to give the seminar in a given term should sign up for the graduate student seminar on a Letter Grade basis. Other students should sign up on the Pass/Fail basis. At least eighty percent attendance will be required to obtain a passing grade in the graduate student seminar series. Graduation hour credit is not given for the seminar.
 7. All graduate students pursuing the M.S. thesis option or Ph.D. are required to take a 1-hour Graduate Colloquium (PTFE 6999) on a Pass/Fail basis with their advisors, in addition to thesis and/or research assistantship, as long as they are registered at Georgia Tech, except for their first semester.
 8. M.S. students must take all PTFE courses counting toward the core graduate degree requirements on a Letter Grade basis. This excludes Thesis, Special Problems, Graduate Colloquium and Graduate Seminar courses (please see item no. 6). However, up to three credit hours of elective course work may be taken Pass/Fail, and applied toward the degree hour requirements.

F.2. RESEARCH ASSISTANTSHIP

Graduate Research Assistantships are paid from funded research projects and are renewed every term subject to satisfactory academic record and research performance. Lack of research progress jeopardizes future funding and can result in termination of assistantship. For a Ph.D. student, assistantship will be limited to four years. Renewal beyond four years will require special justification and the approval of the thesis committee. Examples of justification includes change of research topic and/ or change of thesis advisor, unforeseen difficulty in research, undue delay in procuring or fixing instrument(s) that is essential for research, and the course work recommended by the advisor and/or the thesis committee beyond the minimum major/minor course work requirement. Lack of diligence, poor planning, normal difficulties encountered in research, and courses taken beyond the major/minor requirement without the express approval of the thesis advisor are not to be considered as justification for funding beyond four years. Students should consult with their advisors, if they anticipate a funding requirement beyond four years.



F.3. ADVISEMENT

It is expected that the student will have open communication and good rapport with his/her advisor(s). To obtain full benefit of advisor's experience, students should feel free to seek their advisor's advice as frequently as practically possible. If unresolved conflicts do occur, students should feel free to consult any member of the graduate committee, their thesis committee, and/or the School chair as appropriate.

F.4. SAFETY REQUIREMENTS

All incoming graduate students in the PTFE graduate programs are required to take the Safety and Ethics course (PTFE 6998) in the Fall semester. Graduate students are required to familiarize themselves with the **Institute Fire and Life Safety Manual** and to abide by safety rules in the laboratory. Failure to follow agreed-upon safe practices may result in dismissal from the program.

F.5. COMPUTER PROFICIENCY

All incoming graduate students will be required to demonstrate computer literacy on entering the program. Those found deficient will be required to take Computer Science 1321 for no credit toward the graduate degree.

F.6. AUDITING COURSES

When signing up to audit a course, the student must meet the requirements established by the course instructor at the beginning of the term. These requirements may include attending all classes, completion of the homework assignments and taking the quizzes. If the student does not satisfy the instructor's minimum criteria, the student's name will be deleted from the final class roll.

If this results in the number of hours scheduled dropping below 12 and the student is receiving financial aid, the aid will be terminated. For an international student, if deleting the audited course drops the number of hours registered to below 12, the student will no longer be considered a full-time student. This may affect the international student's visa status.

F.7. THE ACADEMIC YEAR

Graduate students may take advantage of a **two-week** vacation and the ten University administrative holidays during each 12-month period of residency. Vacation and any special (unpaid) leaves must be approved well in advance by the thesis advisor and the research director if the student is working on a separate project as a GRA.

Periods between terms are not automatic vacation days. Furthermore, the long period of instructional recess in December is to be a time of working and studying; it is a particularly valuable time for first-year students for making headway on development of their research and presentation skills.

F.8. SCHOOL KEYS AND PROPERTY

Keys to offices and laboratories student need permission by the faculty responsible. The keys are issued from Dan Brooks. You may email Dan at dan.brooks@mse.gatech.edu. Keys issued while enrolled as a student, as well as any other School property in the student's possession (research notebooks, equipment, etc.) must be returned to the School prior to graduation. **Failure to turn in the school keys and property will result in delay of the student's graduation.**

F.9. LABORATORY CLEAN-UP REQUIREMENT

Graduate students involved in any kind of research are required to clean up their area of responsibility and identify all materials before leaving the Institute. The Department of Environmental Safety will inspect the laboratory and ensure that all chemical substances are acceptable for disposal and that the area being vacated meets laboratory safety guidelines. Graduate students will not have their final grades released or final paychecks released until they have complied with this Institute policy. Failure to comply with this Institute policy will make the host department responsible for all costs involved with the required chemical analysis for identification of "unknowns" as well as any costs involved with the disposal of chemical waste, other substances and/or research apparatus. **Consequently, the School will enforce this Institute policy and failure to follow proper procedures may jeopardize the student's graduation.**

G. MULTIDISCIPLINARY PROGRAMS

The School participates in several multidisciplinary programs at the graduate level, such as,

Polymers
Composites
Manufacturing

Students who pursue these programs must meet basic requirements for a graduate degree in the Polymer, Textile & Fiber Engineering. In addition to a diploma, the student receives a certificate, issued by the College of Engineering that certifies participation in a specific multidisciplinary program. A student who wishes to pursue one of these programs should consult with the advisor of the program before deciding on a proposed program of study.

H. GRADUATE CO-OP REQUIREMENTS

A student planning to co-op must meet the following requirements:

- Good academic standing (GPA of 2.7 for M. S. students and 3.0 for Ph.D. students)
- Ph.D. students should have been admitted to the candidacy of the Ph.D. degree.
- A letter from the student's advisor approving the Co-Op application

The student must complete the PTFE Co-Op Permission Form and submit it to the PTFE Graduate office with the advisor's approval by the second full week of the semester *preceding* the work semester. This will enable the student to explore opportunities with the Institute Graduate Co-Op office during the semester.

I. GT STUDENT POLICIES

There are a number of Georgia Tech policies that are relevant to students. It is the student's responsibility to familiarize him/her with these policies and abide by them. The policies can be found at <http://www.deanofstudents.gatech.edu/>

The policies regarding various types of standings such as special graduate student status can be found at <http://www.catalog.gatech.edu/admissions/grad/admissions/standing.php>



For questions, comments, and suggestions on this graduate handbook, please send an email to dong.yao@mse.gatech.edu.