Guide to Graduate Studies in the Department of Chemistry

Excellence in graduate training is central to the research and teaching missions of our department. The success of our Ph.D. students is of paramount importance to us. This handbook, along with the supplementary materials, is intended to provide a clear guide to the steps leading to the Ph.D.

Our Ph.D. program, reviewed and redesigned with extensive student input in 2000 and further updated in 2004, emphasizes research training and productivity, original and creative thinking, and developing excellent communication skills to support a successful scientific career. The handbook describes:

• orientation information to help first-year students get settled and off to a quick start,
• formal requirements for the Ph.D. Degree in Chemistry, as well as an M.S.,
• annual review procedures designed to ensure steady, timely progress toward the degree, and
• department policies affecting finances, time off, and other matters.

All of the requirements and policies in this handbook apply to students entering the program beginning in Fall 2006. Please keep in mind that Valerie Bridge will typically be your first contact for most questions you may have and that you can also find a copy of this Guide to Graduate Studies in the graduate section of the department web site, http://www.chem.cmu.edu/grad/guide/.
Please feel free to discuss additional questions with us at any time.

Graduate Program Committee
Rea Freeland, Co-Chair
Linda Peteanu, Co-Chair
Catalina Achim
Bruce Armitage
Stuart Staley
David Yaron
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Getting Oriented

Logistics

ID Cards: You can get your Carnegie Mellon photo ID card at the HUB. Your card will also give you access to Mellon Institute (MI) and the MI library after 5:00 PM. These ID cards have recently added features and you will receive more information about this soon.

Phones: Most Carnegie Mellon phone numbers begin with 268. When you are on campus, you dial simply 8 and the last four numbers. For off campus calls, dial 9+1 and the ten-digit number. Long distance calls are billed to you individually.

Parking and Transportation: If you want to purchase a parking permit (prices vary according to location), you need to contact the Parking Office immediately (x82052) since student spaces may run out. The parking office hours are 8:00 am. to 4:30 p.m., Monday-Friday. The university has an arrangement with the Pittsburgh bus system so that you can ride free in a large region with your Carnegie Mellon ID.

Computer Accounts and Email: You will have a computer account on the “Andrew” system when you arrive if we have your social security number, or as soon as a temporary social security number is assigned. You may want or need to have accounts on multiple machines but we recommend that you have your email forwarded to a single address. You should plan to check your email at least twice a day. Many important announcements and requirements will be sent to you only by email.

Mailboxes: The main Chemistry mailroom is in MI near the rear elevator. You will be assigned a mailbox, typically shared with several other students. Please see Jack Thorpe x8-3170 as soon as possible to get a mailbox. You should plan to check your mail at least 2-3 times per week.

Mellon Institute Computer Cluster: The cluster in MI 320A provides twenty-four hour access to Macs and PCs with university ID/access card. You will probably want to use the cluster until you have a temporary desk assignment and possibly as a supplement to the machines available in your research group.

University Center: The University Center houses a large variety of facilities, including recreational areas (pool, gymnasium, weight room, aerobics); dining options; the University Shoppe (textbooks, clothing, gifts), Entropy (a convenience store), and Skibo Coffeehouse (location of regular happy hours sponsored by the Graduate Student Assembly).

Photocopiers: The department photocopier in MI 400 may be used with the proper access code for your research group. You can also sign out journals for very brief periods (2 hours) to make copies on the department copier. Until you join a research group, please see Valerie about making copies. Danette Stromyer handles calls for maintenance of this copier. Jack Thorpe x8-5114, runs the Mellon Institute Copy Center in MI 349. Teaching assistants will typically be responsible for course-related copying and should make an effort to use the copier in the Doherty Hall undergraduate office for this purpose. The photocopier in MI 400 can also be used with a separate access code obtained from Danette Stromyer.
Fax: A fax machine (412/268-1061) is available for faculty, students, and staff with an account number. Please record all transmissions.

**Key Contacts**

**Hyung Kim**, Professor and Department Head
Mellon Institute 510, x8-6489, kim@chem.cmu.edu
Responsible for the overall leadership and administration of the department. For appointments, contact Brenda Chambers X8-1062.

**Rea Freeland**, Associate Head and Graduate Program Committee Co-Chair; Associate Dean for Special Projects
Mellon Institute 440B, x8-7981, rf51@andrew.cmu.edu
Assists with the overall administration of the department. Oversees graduate program, focusing especially on choice of advisor, attainment requirements, committee meetings, and fellowships. Serves as ombudsperson for graduate students to assist with difficult academic or personal situations where a confidential sounding board and/or an intermediary can be helpful. For appointments contact Velda Brunson X8-1053.

**Linda Peteanu**, Associate Professor and Graduate Program Committee Co-Chair
Mellon Institute 825C, x8-1327, peteanu@andrew.cmu.edu
Oversees graduate program, focusing especially on the formal seminar, research progress report, and proposal.

**Valerie Bridge**, Graduate Program Specialist
Mellon Institute 404, x8-3150, vb0g@andrew.cmu.edu
Assist in administration of graduate studies, including registration, enrollment, program requirements, stipend, etc.

**Karen Stump**, Director of Undergraduate Studies and Laboratories; Teaching Professor
Doherty Hall 2120, x8-2340, ks01@andrew
Advises undergraduate students and oversees the undergraduate teaching curriculum. Responsible for the operation of the undergraduate laboratories and oversees the laboratory staff. Works closely with graduate students as Teaching Assistants by making TA assignments, providing training and overall supervision.

**Georgene Wittig**, Program Assistant for Undergraduate Studies
Doherty Hall 2114, x8-2318, gwittig@andrew.cmu.edu
Assists in administration of the undergraduate program. Handles scheduling undergraduate classes and reserving rooms for review sessions or office hours in Doherty.

**Drew Potratz**, Senior Systems/Software Engineer
Mellon Institute 509B, x8-8255, ap2a@andrew.cmu.edu
Administers the department’s computers and works with liaisons within each research group. Maintains helpful documentation for some common tasks at [Http://drewski.chem.cmu.edu/chem/](http://drewski.chem.cmu.edu/chem/)

**Timothy Sager**, Business Manager
Mellon Institute 440, x8-3343, ts1c@andrew.cmu.edu
Oversees the business functions of the Department, including personnel, payroll, and research contracts.

**Brenda Chambers**, Administrative Associate  
Mellon Institute 412, x8-1062, brendac@andrew.cmu.edu  
Coordinates key departmental activities such as faculty searches and reviews, as well as department social events.

**Patsey Haddock**, Fiscal Secretary  
Mellon Institute, Room 509B, x8-1064, pw17@andrew.cmu.edu  
Responsible for purchase orders, petty cash, work orders for building repairs, and property management.

**Velda Brunson**, Administrative Coordinator  
Mellon Institute 408, x8-1053, vbranson@andrew.cmu.edu  
Coordinates Graduate Student seminars, schedules Writing Consultations, manages schedules for Introduction to Research and Graduate Seminar. Assists with graduate recruiting and admissions. Handles conference room and other meeting room scheduling/reservations.

**Danette Stromyer**, Office Support Staff  
Mellon Institute 408, x8-3272, danettes@andrew.cmu.edu  
Distributes paychecks and office keys. Handles reservations for the Theory Suite Conference Room and provides support for the Departmental Seminar Series and Department Retreat. Handles problems with photocopier and fax. Orders for department coffee service.

**Committees on Graduate Affairs**

**Graduate Program Committee (GPC)**  
The Graduate Program Committee will advise first-year students about courses, selecting an advisor, and other matters during your first year. The GPC also provides general oversight regarding the graduate program policies and procedures, including the compilation of annual feedback for all graduate students. Current members of the GPC are:  
**Rea Freeland** (Co-Chair), **Linda Peteanu** (Co-Chair), Catalina Achim, **Bruce Armitage**, **Dave Yaron**, and **Stuart Staley**. General questions or concerns regarding registration, grades, and program requirements should be directed to Valerie Bridge. Detailed questions and concerns you may have about your academic progress or upcoming program requirements can also directed to Rea Freeland or Linda Peteanu. However, you should feel free to talk with any member of the committee about your questions or concerns. **Rea Freeland** also serves as graduate ombudsperson (page 28) to assist with delicate or confidential concerns.

**Chemistry Graduate Student Advisory Committee (GSAC)**  
The Graduate Student Advisory Committee provides input to the GPC on matters of concern to graduate students and the graduate program in general. For example, the GSAC has been involved in revisions to the graduate program requirements and in assessing the program. You can also talk with members of the GSAC to learn more about the graduate program and to share feedback about it. You can also address concerns to them and they can often help you determine how to get assistance. Membership of the committee is currently being updated and will be announced as soon as it is available.

**MCS Graduate Student Advisory Committee (MCS GSAC)**  
Similar to the departmental GSAC above, the Mellon College of Science has a group of graduate students (two from each department) to provide input to the Associate Dean for Faculty and Graduate Affairs. The MCS GSAC also organizes
events such as the annual MCS Graduate Student Poster Session and panel discussions on careers in science. Anya Zatsman and Jessica Cooper currently serve on the MCS GSAC.

Graduate Student Assembly (GSA)
The Graduate Student Assembly (GSA) serves as student governing body for graduate students at Carnegie Mellon. In addition to university services listed here, the GSA actively works on issues to improve the quality of life for graduate students and to provide varied social activities to enhance students’ experience of graduate school. Departmental happy hours and the department’s graduate student lounge are funded in large part by graduate students’ activities fees. Haifeng Gao, Josh Hayden, and Greg Drozd currently share the role of the department’s representative to GSA.

More resources in the university for graduate student concerns can be found at:

Introduction to Facilities and Resources

Center for Molecular Analysis (CMA)
The Center for Molecular Analysis provides training to faculty, graduate students and research staff in the operation of the various instruments there, including FTIR/NIR, UV/VIS/NIR, NMRs, MALDI/TOF mass spectrometer, Quadrupole field ion trap mass spectrometer, Diode Array UV-VIS, CD, and HPLC. Reservations for time on the instruments can be at http://www.chem.cmu.edu/cma/.

Location: Mellon Institute 853
Contacts:
Mark Bier, Director CMA
Telephone: x8-3540

Roberto Gil, Director of NMR Facility
Telephone: x8-4313

Environmental Health & Safety (EH&S)
EH&S provides expert training and overall guidance in safe management of chemicals and biological agents in research and teaching labs. Their URL is http://www.cmu.edu/ehs/. The department also has asked each research group to appoint a safety officer so you will have someone nearby who is familiar with EPA expectations and safe lab practices. EH&S will provide the training you need for your research; please be sure to discuss with your advisor any specialized training you may need.

Mellon Institute Library
The ML Library has an excellent collection, particularly in journal holdings.
Location: Fourth floor of Mellon Institute
Contacts: Kathy Bossick, Carol Sanders
Telephone: x8-3172 and x8-3171
Mellon Institute Stores
This is the shipping and receiving area for MI and also stocks chemicals, electrical supplies, and hardware.
Location: Third floor, near the rear entrance/exit.
Contact: Tony Filotei
Telephone: x8-3212

Mellon Institute Copy Center
Copying facilities for use with departmental account number.
Location: Third floor, Room 349
Contact: Jack Thorpe (from 8:30-12:30pm in the copy center)
Telephone: x8-5114

Mellon Institute Post Office
The MI Post Office handles U.S., international, and campus mail.
Location: Third floor, near the rear entrance/exit.
Contact: Jack Thorpe (from 2:00-4:00pm in mail room)
Telephone: x8-3170

Undergraduate Program Office
Many instructors use this as a common location where TAs pick up student papers.
Location: Doherty Hall 1317
Contact: Georgene Wittig
Telephone: x8-2318

Undergraduate Computer Cluster
These Macs and PCs are for chemistry major use and can be a place for you to check email conveniently when you are in Doherty.
Location: Doherty Hall 2300
Contact: Georgene Wittig
Telephone: x8-2318

Undergraduate Laboratories
The Doherty Hall labs are the location for the laboratory courses in which many graduate students work as TAs. The recent $26 million renovation provides an eight story renovation to replace the current space and opened for classes in Spring 2003.
Locations: 1st, 2nd, and 3rd floors
Contact: Karen Stump, Director of Undergraduate Laboratories
Telephone: x8-2340

University Student Services
The following list will help you begin to get settled at Carnegie Mellon. For more detailed information regarding student services, please consult the latest version of the Graduate Student Handbook at http://senate.web.cmu.edu/qa/index.php?page=grad_handbook
Enrollment Services ("The Hub"): The Hub is the central location for obtaining your ID, course registration, and other enrollment services. It is located in Warner Hall, Room 28A. Please see the Enrollment Services website for http://www.cmu.edu/hub/ for additional information such as the schedule of classes.

Housing Office: Located in Morewood Gardens E-Tower, the Housing Office (x8-2139) will furnish you with listings of rentals in the vicinity. Their web site is http://www.housing.cmu.edu/CommunityHousing/. Additional information about housing is available on the Graduate Student Assembly website at http://senate.web.cmu.edu/gsa/index.php?page=housing.

Payroll Office: Detailed questions regarding your paycheck (income tax, etc.) should be directed to personnel in this office, located at 4516 Henry St. Note that Tim Sager, Business Manager for the Chemistry Department, (x8-3343) should be consulted first.

Student Health Service: Located in the first floor of Morewood Gardens E-101 (X8-2157), this office can provide information regarding health insurance and a variety of basic medical care. Open from 8:30 a.m.-5:00 p.m. Monday-Friday. Doctor’s hours are from 1:00 p.m.-5:00 p.m.

Counseling and Psychological Services: Morewood Gardens E-Tower (X8-2922) provides short-term counseling for stress, depression, anxiety, and other personal concerns and referrals to local psychologists and psychiatrists for continuing care.

Campus Police (24 hr. service): The number to call in case of emergency is x8-2323. Well-lit blue phones are also available in strategic locations around campus in case of emergency. This office also coordinates an escort service for students working late to ensure your safety on campus. Call the Escort Service at 8-RIDE or 412-268-7433.

Graduate Programs Office: The GPO (Warner 419) is responsible for support programs for graduate students including some small travel grants, professional development seminars, and events for women and students of color.

Eberly Center for Teaching Excellence: The Eberly Center (Cyert Hall 110) provides seminars and individual consultations to help graduate students who wish to improve their teaching or prepare for future careers as faculty members.

Office of International Education: The Foreign Student Advisors, on the third floor of Warner Hall, are important contacts to assist you with questions about visas. This office also organizes the International Student Orientation held during the second week of August. You can contact them by email at gfsadv@andrew.cmu.edu.

Intercultural Communication Center (ICC): The ICC, in Warner Hall 418, provides language training and testing for all non-native speakers of English at Carnegie Mellon. Recommendations for training, where needed, are highly individualized and often combine short workshops, videotapes, and/or tutoring. More details about ICC programs and policies are available at http://www.cmu.edu/icc/
Important University Policies and Resources

Environmental Health and Safety
http://ehs-alert.fms.bap.cmu.edu/
EH&S provides a broad range of services to the university to promote the protection of its community. Their web site includes biological, chemical and lab safety information and MSDS links.

University Policies
A University Policy is a rule that has been officially sanctioned by the president of Carnegie Mellon University and senior university leadership, and that generally has university-wide applicability. We list links here to several of these policies of which graduate students need to be aware. A more complete list of policies is available at:
http://www.cmu.edu/policies/

Carnegie Mellon University Doctoral Candidate Policies for All But Dissertation (ABD)
http://www.cmu.edu/policies/documents/ABD.html

Carnegie Mellon University Student Leave Policy
http://www.cmu.edu/policies/documents/StLeave.html

Carnegie Mellon University Academic Disciplinary Actions Overview for Graduate Students
http://www.cmu.edu/policies/documents/GradDisc.html

Carnegie Mellon University Policy on Cheating and Plagiarism
http://www.cmu.edu/policies/documents/Cheating.html

Carnegie Mellon University Computing Policy
http://www.cmu.edu/policies/documents/Computing.htm

Carnegie Mellon University Student Health Insurance Policy
http://www.cmu.edu/policies/documents/StudentInsurance.htm

Carnegie Mellon University Policy Against Sexual Harassment
http://www.cmu.edu/policies/documents/SexHarass.html

College Policies

MCS Doctoral Degree Policies
http://www.cmu.edu/mcs/handbook/doctoral.html

MCS Grievance Procedure for Graduate Students
http://www.cmu.edu/mcs/policies/grievance.html
Ph.D. Requirements

This section describes the formal requirements for the Ph.D. Degree in Chemistry at Carnegie Mellon as well as the review procedures designed to ensure steady progress toward that degree. It is intended to provide a clear guide to the steps leading to the Ph.D. Degree in Chemistry. The requirements for the Ph.D. Degree have been formulated to aid the graduate student to develop the proficiency expected of a research scientist in chemistry. In the interests of both the students and the faculty, the requirements for the Ph.D. degree carry a schedule for their completion. The schedule and review procedures are intended to speed the student’s progress toward Candidacy and provide consistent focus on the student’s research progress. Although possible, extensions will not be considered the norm. The Department will regularly inform students of their progress toward the degree (see Annual Reviews below). Failure to satisfy any requirement on a timely basis is cause for a dismissal from the graduate program following the procedures outlined below under Academic Actions. Note that an academic year comprises two semesters, with the summer not being construed as a semester.

In the event that the requirements are changed, students may adopt the new requirements or remain under the requirements in effect on their matriculation, at their discretion.

Attainment Examinations

By the end of the third semester, entering graduate students must pass an attainment requirement in each of three areas of chemistry: Organic, Inorganic, and Physical. The purpose of this requirement is to ensure sufficient background for graduate coursework and further research.

Expectations

Students may meet this requirement by either:

- Passing an attainment examination in each area, or
- Passing graduate course work in the area, typically 12 units, as deemed appropriate by the Graduate Program Committee with a grade of at least a B in each course.

Normally, all students will take attainment examinations upon arrival in the department for the purpose of guiding advising on courses. Based on the results of the exam, the choice among the options above is determined by the Graduate Program Committee after consultation with the student and advisor (if one has been selected). Note that if a student does not have sufficient background to enter a graduate course in a given area, he/she will need to take (or audit) undergraduate coursework approved by the Graduate Program Committee, and then either retake and pass the attainment exam in that area or pass appropriate graduate course work by the end of the third semester in residence. Attainment requirements must be satisfied before a student may complete the research progress report requirement.

Outcomes

Students may retake the attainment exam when it is administered to new students in January and/or the following August. Failure to pass the attainment requirements by the end of the third semester will lead to probation. Failure to
meet this requirement by the end of the second year will lead to a delay in completing the research progress report and/or termination from the program.

Courses

At least four graduate level courses in chemistry or related fields must be passed with an average grade of B (3.0) or better by the end of four semesters in residence. Students are encouraged to take at least one of these courses outside of their research area.

Courses may be taken in other departments or at the University of Pittsburgh (through cross–registration) with the approval of the Academic Advisor. The Department of Chemistry accepts the grading policy of other departments and the University of Pittsburgh for approved courses.

Students may request transfer of credit for up to two previous graduate courses from other institutions that are equivalent to courses offered at Carnegie Mellon. The student must provide a sufficient course description for such courses and obtain signatures from the Carnegie Mellon course instructor, his/her advisor, and the Graduate Program Committee. An approval form is available from the Graduate Program Assistant. A minimum grade of B is required to transfer credit for a course.

Expectations and Outcomes. The student must maintain an overall average of B for all courses taken (graduate and undergraduate courses, excluding research units). Any failure to comply with this requirement must be rectified by the end of the subsequent semester. Two semesters in which the coursework GPA is less than 3.0 will be considered grounds for termination from the Ph.D. program.

SEE ONLINE GUIDE FOR: Form for Transfer of Graduate Course Credit

Graduate Teaching

Every student must teach for two semesters as a Teaching Assistant, either as a recitation TA, laboratory TA, or a grader. The purpose of this requirement is to help students prepare for teaching and mentoring roles in academia and industry and to contribute to the quality and safety of instruction in the undergraduate program. This formal academic requirement is an important part of a graduate education and must be completed to the satisfaction of the instructor for that course. The duties of a Teaching Assistant require approximately 15-20 hours per week. Note that TA duties are one of the primary sources of financial support. Therefore, the expectations below are important for all TAs.

Expectations. The Department provides TA training each August specific to the roles of recitation TAs, lab TAs, and graders for which attendance is required for the first two semesters in which the student serves in a particular role. Teaching assistants are expected to fulfill all of the responsibilities of their role in a timely fashion and to make appropriate arrangements with the instructor at least 1-2 weeks in advance if they anticipate any difficulties in doing so. For example, instructors need to be consulted in advance if a TA would like to arrange for someone to teach a class for him or her. Barring unforeseen emergencies, travel arrangements must be made far enough in advance that they do not conflict with TA training and teaching responsibilities.

Outcomes. Instructors determine the expectations for each graduate TA assignment and are asked to inform the GPC and the Director of Undergraduate Studies if a TA does not adequately meet these expectations. To help TAs meet these expectations,
instructors are expected to provide written feedback, via a brief email questionnaire, early in the course. The feedback should be sent to the TA, cc’ed to the Director of Undergraduate Studies, and the GPC Co-Chairs. If a student is informed of a significant deficiency and does not address the problem adequately, that semester will not count toward the two semesters required for the doctoral degree.

**English Language Proficiency**

Each student for whom English is not a native language must demonstrate fluency in spoken English by the end of the first year in residence. The Intercultural Communication Center (ICC) has been established by Carnegie Mellon University to teach this skill, and administer the required fluency test. The purpose of this requirement is to ensure every student’s ability to communicate effectively with Department members and external colleagues about their research and to enhance their ability to contribute effectively to the Department’s educational programs.

**Expectations.** Students are generally expected to rate in Category 3 or better on the International Teaching Assistant Test by the beginning of the third semester in residence and to continue working toward Category 1 or 2. Starting in the first semester in residence, the Department expects a consistent effort in working with the ICC and in speaking English regularly in departmental activities to achieve these goals in a timely manner. While the ICC may recommend different workshops for different individual needs, a student’s total hours in workshops, tutoring and self-paced work at the ICC should be between 15-30 hours each semester until reaching Category 2 or 3 to be viewed as consistent effort.

Note that all students who are rated in Categories 2 and 3 who are working as TAs are required by Pennsylvania law to work concurrently with the ICC to improve their English fluency, typically through the workshops and/or individual tutoring.

In addition, the Department strongly encourages students to use English day-to-day in discussing their research since non-technical conversations in English often do not improve fluency on scientific topics. Advisors are also encouraged to talk directly with students when problems with English appear to interfere with communication about research and to inform the GPC as early as possible when they have concerns in this area.

**Outcomes.** Good standing in the department may be jeopardized if a student neglects to work sufficiently on their English fluency, based on the ITA Monitoring reports recording participation in ICC activities. However, because the Department recognizes that language learning rates can vary substantially, the deadline of reaching Category 3 by the beginning of the third semester may be adjusted for individual students’ needs as long as the student maintains appropriate, consistent efforts to improve. Failure to reach Category 3 by the beginning of the third semester may delay completion of the formal seminar requirement.

Failure to make sufficient efforts in line with recommendations from the ICC and the Department may lead to probation after one semester. Failure to sustain consistent efforts to improve English fluency will lead to a delay in completing the research progress report and/or termination from the program.

**SEE ONLINE GUIDE FOR:** ITA Test Category Descriptions

http://www.cmu.edu/icc/testing/ITA/ITAscoring.shtml

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**Research Advisors**

A Research Advisor is to be selected from the Chemistry faculty by mid-semester of the second semester in residence. This involves mutual agreement between the student and the faculty member, and requires approval by the Department Head. Selecting an advisor and joining a lab/group in the first semester is encouraged when the student is confident of his/her interests. Where co-advisors are desired, both advisors, the student and the department head must agree.

**Expectations.** In general, students should actively seek out faculty during the first semester to discuss their research interests. In addition, students are encouraged to visit regular group meetings to learn more about the ongoing research and meet others in the group.

Prior to selection of a Research Advisor, students are strongly encouraged to discuss their research interests with a minimum of three faculty members. Moreover, the students should get to know the faculty widely, get advice from students whose studies are further advanced, and visit with faculty in their offices. It must be understood that the chosen advisor will occasionally decline the relationship, either because of overload, lack of sufficient research support or intellectual compatibility. A student without a Research Advisor may not be eligible for financial support in the summer.

The Research Advisor becomes de facto the Academic Advisor to the student. The primary responsibility of the Research Advisor is directing the research for the dissertation, but also includes guidance for meeting the other Ph.D. program requirements, general educational advice, career planning, and often job search assistance.

Either the student or the Research Advisor may terminate their relationship. A student otherwise in good standing may then select a new Research Advisor on mutual agreement between the student and the faculty member, and approval by the Department Head. A student needs to join another group prior to summer in order to continue in the Ph.D. program.

**Advisory Committees**

In consultation with the Graduate Program Committee and his/her advisor, a student will select a Research Advisory Committee by the beginning of the third semester in residence. The purpose of this Committee is to discuss the student’s progress annually and provide additional guidance on research and overall professional development. This committee will comprise the membership of the examination committee for the research progress report and original research proposal, although the Graduate Program Committee may add another member if additional expertise is needed in a specific area. In addition, after the student advances to candidacy, the Advisory Committee will meet with the student annually in Dissertation Progress Meetings to support timely completion of their Ph.D. A typical Advisory Committee will consist of the Research Advisor and two other Chemistry faculty members, normally from the Tenure Track or Research Track. When it would be advantageous for the student’s research, one of these members may be from outside the department. Note that each faculty member may serve on a limited number of these Advisory Committees to ensure that he/she can provide the appropriate amount of attention to each student. Therefore, students are typically advised to have committees with three faculty members; students with co-advisors should have four members.
The student will also select a Chair of the committee, different from the Research Advisor, whose role is to oversee the oral exams for the research progress report and original proposal, to provide general guidance regarding the original proposal, and to help in preparing for dissertation progress meetings.

SEE WEBSITE FOR:  
MCS Policy on Dissertation Committees  
http://www.cmu.edu/mcs/handbook/degree.html

Formal Seminar

Each student must present a formal seminar during the third semester of residence. The seminar may be given in an earlier semester if the student is ready.

The purpose of the seminar is to train students to speak to an audience of faculty and peers about chemistry and to read the research literature appropriately. Students will enroll in 09-911, Graduate Seminar for their first four semesters, and receive course credit for delivering their seminar and providing constructive feedback to other students on their presentations.

Expectations. The topic may be chosen by the student with the approval of the student’s advisor and the GPC co-chairs. Students may choose a seminar topic to serve as a foundation for the original proposal. An extension to present the seminar in the fourth semester in residence may be requested by petitioning the Graduate Program Committee, explaining what makes the circumstances exceptional and proposing an alternate deadline.

The seminar must be based on published work done in other laboratories. In general, seminars should draw on many articles from the literature and represent a synthesis of ideas that goes beyond summarizing individual pieces of research. An annotated bibliography should be submitted two weeks in advance of the presentation to the course instructor and student’s advisor. Presentations are expected to be approximately 30-40 minutes in length, with 10-20 minutes of questions and discussion with peers and faculty. Students are advised to arrange a practice talk with their advisor and others to prepare. Additional guidelines are available in the supplemental materials section and by meeting with GPC members.

Outcomes. Formal evaluation will be by the course instructor, the student’s advisor, and one other faculty member selected by the student (ideally a member of his/her Advisory Committee), and will include evaluation of responses to questions. The student will receive detailed feedback and constructive suggestions on the seminar in writing and in person from at least two faculty members, along with written feedback from the audience.

Should the seminar be determined to be deficient (recorded as failure), the advisor may allow the student to repeat the requirement before their Advisory Committee or in the Graduate Seminar setting. In this case, the deficiencies must be communicated in writing by the course instructor and advisor to the student and the Graduate Program Committee, along with a new deadline for re-presenting the seminar. The student may not proceed to defend the research progress report without a satisfactory performance on the formal seminar.

SEE ONLINE GUIDE FOR:  
Sample Seminar Feedback Form
Research Progress Report

Each student must write and present a detailed progress report on the proposed thesis project and present that to both the department and to the Advisory Committee in the fourth semester in residence. The purpose of the report is to demonstrate that the student has achieved a substantial level of understanding of the theoretical and/or experimental background of the thesis project, is making appropriate progress in obtaining results, and can discuss their ongoing work in a clear and professional manner. The report includes a poster presentation to the entire department, a written report, and an oral exam by the Advisory Committee.

Poster Presentation. The report is to be presented as a formal poster presentation, following ACS format, with an accompanying research overview paper (details described below). The presentation must include the scientific objectives in the thesis research, an overview of the necessary background material, the theoretical and experimental techniques used, and representative results obtained to date. Students should expect to present their research in approximately 5-10 minutes, repeated 3-4 times in round-robin style, during the day of the poster session and to answer questions from a wide variety of faculty members and graduate students. Attendance at the poster session portion of the progress report may be by any of the Chemistry Faculty, graduate students, or other interested members of the department or university.

Written Progress Report. In addition, a 10-15 page research overview, or equivalent submitted journal articles or preprints on the student’s work, must be presented to members of the Advisory Committee and the Graduate Program Committee at least one week before the scheduled poster session. The purpose of the paper is to summarize the student's research progress to date and provide context for the work presented at the poster session. Therefore, the report should include:
• an overview of the relevant theoretical and/or experimental literature,
• methods, results and discussion of work-to-date, including addressing major difficulties encountered, and
• a brief discussion of possible future directions for the research.

Oral Exam. Within 1-3 weeks after the poster session, the student will meet with the Advisory Committee for a private oral exam on his/her research progress. The purpose of the oral exam is to ensure that the student has the necessary background knowledge to conduct his/her research. During this oral examination, the student is expected to demonstrate a thorough understanding of the literature and methods relevant to the research, including subject matter tangential to any material in the written report or oral presentation and fundamental theoretical or experimental concepts relevant to the work. The student should also be able to discuss possible future directions for the research. Attendance at the examination may be by any of the Chemistry Faculty, although they will be nonparticipating spectators.

Timeline. The written research progress report should be presented to the Advisory Committee at least one week before the scheduled poster session. When the paper is submitted, a date for the oral exam should be arranged that is acceptable to all committee members and falls within 1-3 weeks of the poster session. The student must receive both oral and written feedback from the committee on the day of the exam.

Outcomes. Should the progress report be determined to be deficient (recorded as failure), the Advisory Committee may allow the student to re-defend the progress report before the committee as a group. In this case, the deficiencies
must be communicated in writing by the Advisory Committee Chair to the student and the Graduate Program Committee, along with a new deadline for re-defending the progress report. If the deficiencies are deemed minor, the student’s performance may be recorded as a conditional pass and the student required to either revise or re-present. As above, the deficiencies and a new deadline should be reported in writing by the Advisory Committee Chair to the student and the Graduate Program Committee by the next day. Approximately 1-2 months would be the typical time allotted for revising the report and/or repeating the oral exam.

SEE ONLINE GUIDE FOR: Guidelines for Research Progress Report, Poster and Oral Exam
Agenda for Progress Report Orals

Original Research Proposal

Each student is expected to write and defend an original research proposal during the sixth semester of residence. The purpose of the proposal is to demonstrate that the student has the ability to generate ideas for original research and to defend the methods and importance of the research.

Topics. To ensure sufficient originality and promote feasibility within the desired timeline, topics must be approved by the student’s Advisory Committee and at least one member of the Graduate Program Committee (see Timeline below). The topic need not exclude the general field of the student’s research but should use some primary sources outside his/her specific dissertation topic. In general, topics should go at least one step beyond what has been published. In addition, to the student’s knowledge, work on the same hypothesis should not have been proposed before. In order to produce work distinct from the thesis topic and to facilitate an oral exam of appropriate scope, depth and rigor, students are encouraged to propose work that could conceivably be done in their lab or group (however not restricted to the instrumentation currently available). Students who wish to pursue work relatively distant from their field of interest are advised to ensure that faculty members with relevant expertise are available to consult and/or serve as an additional examiner.

One-page descriptions of topics are due December 15 for students under the new Ph.D. requirements approved in Fall 2000. Proposed topics should be submitted to the Advisory Committee and at least one member of the GPC at that time. If a student has not received his/her entire committee’s approval and the approval of one member of the GPC by February 15, the student will need to have an Advisory Committee meeting within the next 1-2 weeks. The purpose of this meeting is to allow faculty to resolve directly any concerns or differences of opinion about the topic. Note that typical reasons for rejecting a topic would include insufficient chemical content involved in addressing the question, lack of feasibility, or lack of sufficient distinction from the student’s dissertation research. If the committee’s concerns are not typical ones, the committee chair must clarify their concerns to the student and to the GPC, in writing, at the end of the meeting. If the student is not able to address their Advisory Committee members’ concerns successfully by February 28, the student will be put on probation. One significance of this probation is that subsequent failure to write and adequately defend the proposal by the end of the semester would be grounds for termination from the program. Note that students entering in January will have their deadlines on May 15 of their fifth semester for topic submissions and July 15 for final topic approval.

Written proposal. Like proposals submitted to a funding agency, students’ original proposals will be expected to:
1. include an abstract,
2. state the motivating scientific hypothesis,
3. justify the importance of the scientific problem,
4. review the relevant theoretical and/or experimental background literature,
5. propose the specific research, including details about the theoretical and/or experimental techniques and an estimate of capital costs if nonstandard or specialized equipment is required,
6. predict results, including discussing possible outcomes and demonstrating that the approach is feasible by calculation or reference to previous literature, and
7. discuss the significance of the research.

The format should follow NSF proposal guidelines. Proposals should be 15 pages of text, including figures but excluding references, in a font no smaller than 12 point Times with 1.5 spacing. The student is free to consult with anyone, including the advisor, in developing the proposal, but the advisor’s role should be non-directive and the work should represent the student’s own creative thinking. A final version of the proposal must be distributed to Advisory Committee members at least one week before the scheduled examination date.

**Oral defense.** The defense comprises a public seminar (approximately 30-45 minutes in length) and a private oral examination by the student’s Advisory Committee. One more member may be added by the Graduate Program Committee if more expertise in a specific area is desirable. Attendance at the examination may be by any of the Chemistry Faculty, although they will be nonparticipating spectators. During this oral examination, the student is expected to demonstrate a thorough understanding of the literature and methods relevant to the proposal, including subject matter any material mentioned in the written proposal or oral presentation. While some of the questions may not have clear-cut answers, the Committee will evaluate the student’s ability to reason effectively and draw appropriately on a broad range of knowledge to do so.

**Timeline.** Each student is expected to contact each member of his/her Advisory Committee, and at least one of the Graduate Program Committee members (if none is on the student’s committee), either by email or by scheduling a meeting, during the fifth semester to discuss potential topics and gain approval for a proposal topic. The topic should be presented in writing as a long abstract or problem statement (approximately 1 page with a few primary references). It is the responsibility of the members of the Advisory Committee to inform other members of any objections they have to the topic. All Advisory Committee members must agree that the proposed topic is acceptable. The GPC member will be a nonvoting participant present to anticipate potential concerns. When the topic is approved by the Advisory Committee, the student should immediately set up the following appointments:
- an individual follow-up meeting with the Advisory Committee Chair to occur approximately 6 weeks later to discuss progress on the proposal and
- a defense date within 10-15 weeks of the topic approval that is acceptable to all committee members.

The student must be sure to provide the dates above to the Graduate Program Committee for their review and approval. Note that the GPC meeting to review petitions for extension will usually be held the 3rd week of the spring semester.

**Outcomes.** Should the research proposal be determined to be deficient (recorded as failure), the Advisory Committee may allow the student to submit and defend a revised proposal. In this case, the deficiencies must be communicated in writing by the Advisory Committee Chair to the student and the Graduate Program Committee, along with a new deadline for re-defending the proposal. If the deficiencies are deemed minor, the student’s performance may be recorded as a conditional pass and the student required to either revise or re-defend, again with the deficiencies, conditions for passing, and a new deadline reported in writing by the Advisory Committee Chair to the student and the Graduate Program Committee by the next day. Approximately 1-2 months would be the typical time allotted for
revising and re-defending, with the goal of making the time as short as is reasonable for the required work. The student may not advance to candidacy without a satisfactory performance.

**SEE APPENDIX FOR:**
Guidelines for Original Research Proposals
Agenda for Original Proposal Oral Exam

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**Status in the Program and Advancement to Candidacy**

Students’ status in the program will be reviewed each year (described below under Annual Reviews). Upon successful completion of the research progress report and oral exam, a student’s status goes from "graduate student" to “Ph.D. student” to designate completing a major portion of the requirements for the Ph.D.

Completion of the following requirements will be formally acknowledged by Advancement to Candidacy for the Ph.D. degree in Chemistry (also known as the status “Doctoral Candidate”), and will mark attainment of the status designated All But Dissertation (ABD) by Carnegie Mellon:
- Attainment examinations or approved coursework
- Selection of a Research Advisor
- Selection of an Advisory Committee
- At least four graduate courses in chemistry or related fields with an average grade of B (3.0 or better)
- Formal Seminar
- Research Progress Report
- Original Research Proposal
- Satisfactory teaching for two semesters as a Teaching Assistant
- English Language Proficiency at the level of Category 3 on the ITA test (if a non-native speaker of English).

Students meeting the normally expected deadlines reach candidacy by the end of the third year. ABD students must complete their remaining degree requirement, namely produce an approved dissertation, within seven years of advancing to candidacy. Extraordinary circumstances may necessitate the department to seek an extension of the candidacy status. An extension, however, requires approval by the Dean. Additional information about ABD policies, leaves of absence, and in absentia status is available in the Graduate Studies Office.

**Dissertation Progress Meetings**

**Expectations.** To ensure annual discussion of the student’s progress after he/she advances to candidacy, the Advisory Committee Chair should work with the student to convene a meeting each year after the third year. In the fourth year, the meeting must be held by mid-semester of the seventh semester in residence. The goal of the meeting (in most cases, though it may vary with the student’s research group) would be to review the scope of a preliminary dissertation outline and very rough timeline for completing the needed work. In the fall of the fifth year (and if needed, sixth year), the goal of the meeting would be to discuss progress on the earlier plan and to identify and deal constructively with obstacles to completing the plan within the year. In both cases, a written summary of the meeting should be prepared by the Committee Chair and shared with the student, Advisory Committee members, and the Graduate Program Committee.

Ph.D. Requirements 19
Outcomes. If, at any of these meetings, the Advisory Committee finds the student’s performance to be inadequate, the student’s Research Advisor and/or Committee Chair should communicate these concerns to the Graduate Program Committee within one week. The Graduate Program Committee will review the student’s standing in the program at the time of the last departmental review. In serious cases of little or no progress, the Graduate Program Committee may place the student on probation.

Residency

University regulations require one year of full-time residency.

SEE WEBSITE FOR: MCS Policies on Doctoral Degrees such as In Residence vs. In Absentia
http://www.cmu.edu/handbook/degree.html

Doctoral Dissertation

The student must write and publicly defend a Doctoral Dissertation. The University standard for the Ph.D. degree states that the thesis must embody the results of extended research, constitute an original contribution to knowledge, and include material worthy of publication. It must demonstrate the candidate’s ability to conduct an independent investigation, to abstract principles from which predictions can be made, and to interpret in a logical manner facts and phenomena revealed by the research. This requirement must be satisfied within seven years of the attainment of ABD status, by regulations of the Mellon College of Science.

SEE WEBSITE FOR: MCS Policies on Doctoral Degrees such as Guidelines on Doctoral Thesis Committees
http://www.cmu.edu/handbook/doctoral.html
M.S. Requirements

M.S. in Chemistry

Students may earn the M.S. in Chemistry in the normal course of pursuing the Ph.D. by fulfilling the requirements below. Note that students are not admitted for the purpose of earning the M.S. degree and the department does not offer financial support for students wishing to pursue the M.S. as a terminal degree.

Candidates for the M.S. in Chemistry are assigned to an Academic Advisor for the M.S. Degree, who coordinates with the Chair(s) of the Graduate Program Committee and the Department Head. The Academic Advisor for the M.S. Degree meets with the student to formulate a course of studies, and annually thereafter to assess the progress of the student.

Candidates must complete at least 96 units of work, distributed with some flexibility but subject to the following constraints:

1. A minimum of 48 units must be in graduate lecture courses in Chemistry.

2. No more than 18 units may be in undergraduate courses in Chemistry. These must be in upper-level courses (400 level or above) and may include no course equivalent to one previously required to complete a degree in any other college or university.

3. Relevant upper-level undergraduate or graduate courses in other departments or at the University of Pittsburgh (through cross-registration policies) may be taken for credit toward the 96 units, with the approval of the Director of Graduate Studies.

4. To be used for credit, no grade shall be lower than C. The average grade of 96 units, of the first 120 units attempted, must be at least B. Graduate Teaching, 09-931/2 may not be applied as course credit toward the MS degree.

5. Graduate research credit - candidates who elect to apply units earned in graduate research toward the MS degree must complete not fewer than 20 units of 09-861 (Graduate Research). If more than 25 units of graduate research are to be credited, substantial evidence of research accomplishment or proficiency must be presented. Such evidence can be in the form of a dissertation, or in the significant authorship of scientific publications, or the equivalent, and must be approved by the Research Advisor and the Director of Graduate Studies.

6. If no more than 25 units of graduate research are to be credited toward the MS degree, evidence of research proficiency may be provided by the successful completion of the Formal Seminar requirement of the Ph.D Requirements.
**M.S. in Polymer Science**

Within the general requirements of the Master of Science in Chemistry, the Master of Science in Polymer Science provides the basic background for scientists and engineers to pursue technical careers in industries that manufacture, process and use polymeric materials. In consultation with an advisory committee, the student will arrange a course of studies designed to fit his or her background and career goals. Of the total 96 units, 36–48 units will be required in basic science. Students without prior research experience are encouraged to undertake a research project in collaboration with a faculty supervisor. Faculty members in this research area include Tomek Kowalewski, Krystof Matyjaszewski, Gary D. Patterson, and Newell Washburn.

**M.S. in Colloids, Polymers and Surfaces**

The Interdisciplinary M.S. in Colloids, Polymers and Surfaces (CPS) degree is a joint program with Chemical Engineering designed for professionals working in the polymer field. Participating faculty include Andrew Gellman, Tomek Kowalewski, Kris Matyjaszewski, Gary D. Patterson, and Lynn Walker.

The program is open to students with a bachelor’s degree in science or engineering. Courses are arranged to permit a part-time student to complete the degree work in two years by attending late afternoon and evening classes and by working on a research project during the summer.
Role of the Graduate Program Committee

The Graduate Program Committee (GPC) serves the following functions:

• Advises first-year graduate students on course selection and other academic matters until a Research Advisor is selected,
• Works with students’ Advisory Committees to review and approve topics for original research proposals,
• Monitors students’ progress in annual reviews, based on input from the advisor, and provides written feedback to students,
• Reviews petitions for extensions on program requirements,
• Meets jointly with the Graduate Student Advisory Committee at least once per year to discuss student feedback and concerns about the program,
• Provides ongoing assessment and review of the graduate program, proposing changes as needed, and
• Approves formal academic actions, other than granting of degrees, such as placing a student on probation or terminating a student from the program.

When an immediate action is required, the Chair(s) of the Graduate Program Committee may act for the Committee. The Chairs are also available to advise students on matters that they may wish to bring to the GPC.

Annual Reviews

The primary goals of the Annual Review are (1) to check for and address significant concerns of students and/or advisors that may significantly affect a student’s timely progress to the Ph.D. and (2) to facilitate advisor feedback on issues or skills that may affect the students’ future career development that may otherwise fall into the background during the year.

Each fall the Graduate Program Committee will solicit brief status reports from each student in the program, along with a written response from the student’s advisor, to serve as the basis for an annual review of students’ progress through the graduate program. The major components of the review process are:

• The student’s status report, approximately 1-2 pages long, addressing specific questions distributed in advance.
• Advisors meet each student prior to submitting written feedback to both discuss the student’s status report and to enable the student to ask questions about the advisor’s written feedback.
• Upon agreement of the advisor, the brief status report, along with the advisor’s written feedback and other relevant data such as grades and ICC work, will serve as the basis for review by the Graduate Program Committee.
• The GPC provides brief written feedback including the student’s standing in the program, strengths, and suggestions for improvement.

Advisors or students who have concerns that are difficult to express in the written status report or advisor feedback should consult with Rea Freeland or Linda Peteanu to discuss how to best communicate their concerns.
Since students do not attend the annual review meeting, they are encouraged to meet with the GPC Co-Chairs prior to the review if they have not had enough interaction with the current committee members. Within 3-4 weeks of the review, students will receive a summary of their standing in the program, with comments on their strengths, and suggestions about the areas in which improvements would be most needed or beneficial.

SEE ONLINE GUIDE FOR:  
Procedure for the Annual Review  
Template for Student Status Report  
Checklist for Faculty Feedback to Students  
Descriptions of Standing in the Department

Petitions for Extension

An extension of any of the Department’s program requirements above may be requested by petitioning the Graduate Program Committee, explaining what makes the circumstances exceptional and proposing an alternate deadline. For example, serious illness or a death in the family would be exceptional circumstances, and the desire to finish a paper for publication would not be exceptional. In general, petitions for extensions should be received 6-8 weeks before the expected completion of the requirement or as soon as possible, depending on the reason for the extension request. Note that extensions for the original research proposal will be granted only in rare cases.

If a potential extension is discussed with either of the GPC Co-Chairs in person, it is the student’s responsibility to summarize any agreements made in writing for consideration by the GPC. Requests should not be considered approved until written approval is received from the GPC.

Academic Actions and Appeals

If a student is making poor progress through the program requirements or on dissertation research and no exceptional circumstances have been documented in petitions approved by the Graduate Program Committee, the GPC may place a student on probation. If a student is already on probation and the areas for improvement are not adequately addressed on the timeline specified in the annual review memo, the GPC may require the student to withdraw from the graduate program. In addition, an advisor may also terminate a student from his/her group by first giving written notice of problems to be addressed and a timeline for addressing them. When the problems are serious enough to jeopardize a student’s standing in the Ph.D. program, the advisor will generally consult the GPC to determine whether a warning, probation, or termination is warranted. A student without an advisor normally will not receive funding and cannot remain in the Ph.D. program.

A student will not be terminated from the program without the warning of at least three months of probation, nor will financial support be terminated without 3-6 months warning. A terminal semester with TA support may be offered, depending on available positions and resources, to help the student make future plans or complete requirements for an M.S. If a student is notified of a possible end to funding in the fall and then a termination is warranted in the spring, funding for the summer months may be possible but cannot be guaranteed.
The student may appeal this decision in writing to the Department Head as well as use the MCS grievance procedures by first contacting the departmental ombudsperson and, if a resolution cannot be reached within the department, consulting with the Associated Dean for Special Projects about preparing a formal written grievance to the Dean.
Financial Matters

**Tax implications of stipend support**

All stipends are federally taxable. Information about tax implications of funding can be obtained from Sharon McCarl, Associate Dean of MCS.

**Summer funding**

Graduate student stipends are for the academic year. Summer support normally is provided from research assistantships funded by grants, etc., awarded to the faculty or fellowships/awards received directly by the student from internal or external sources. Limited exceptions may be made for summer support from the Department under some circumstances by prior arrangement with the Department Head, dependent on the available resources. In all cases, a faculty member's decision not to support one of their students during the summer must be approved by the Department Head.

**Policies on outside employment**

Outside employment is prohibited for full–time graduate students in the Department of Chemistry during the academic year. Exceptions may be made for very limited outside employment when deemed appropriate by the Research Advisor and the Graduate Program Committee.

Outside employment is prohibited if summer support is provided. If summer support is not available, the student may seek outside employment with permission of his/her Research Advisory Committee.

**Written notice of changes in financial support**

Every effort is made to provide continuous support to students in good standing, within the limits of the available resources. The Department places a high priority on maintaining continuous financial support for graduate students, and provides notice to students on changes in their financial support, with a 6 month written notification, where possible, in the event of a change in the funding. If a student's funding is lost or reduced or reduced unexpectedly and continuous funding proves difficult to arrange, the student should first consult the Department Head and, if needed, the Associate Dean for Special Projects.

If a student is terminated from the Ph.D. Program, the student's first notice of a possible change in financial support will be included when he/she is initially placed on probation. The probationary period will typically last 3–4 months. If conditions for reestablishing good standing are not met within that time, a student may, depending on departmental resources and available positions, receive a terminal semester in the department with funding through a TA position during the academic year or other employment during the summer.
**Additional Fellowships**

Students are strongly encouraged to pursue all fellowships for which they are eligible and competitive. For example, outstanding U.S. citizens are eligible for NSF Graduate Research Fellowships at the beginning of their first year of a Ph.D. program. In addition, generous gifts from alumni and friends have made possible three departmental fellowships. Announcements about these and additional opportunities are announced by email.

**Attendance at Conferences**

In most cases, decisions regarding the student’s attendance at conferences and funding availability is at the discretion of the Research Advisor. The University provides additional sources of funding to support small travel grants through the Graduate Program Office. The Mellon College of Science also provides a small annual graduate student travel award supplement.
Additional Policies Affecting Graduate Students

Ombudsperson and Grievances

Rea Freeland serves as ombudsperson for graduate students to assist with difficult academic or personal situations where a confidential sounding board and/or an intermediary can be helpful. Examples of situations where students are encouraged to seek advice or assistance include:

- Difficulty in communications with advisor, particularly when those difficulties may lead to potentially changing advisors or leaving the program
- Conflict with other group members that is difficult to resolve within the group
- Issues related to diversity or the departmental climate for those groups who are historically underrepresented in science
- Personal concerns that interfere significantly with the ability to make timely progress in research or program requirements. These might be due to health, family or financial challenges.

Upon the student's request, conversations will be kept in confidence. Additional help should be enlisted, the student would be asked before sharing information. More about departmental ombudspersons can be found on the MCS GSAC website at http://www.cmu.edu/mcs/handbook/ombud.html.

In the event that a difficulty cannot be resolved within the department, Rea Freeland in the capacity of ombudsperson for all MCS graduate students can also assist with following the MCS grievance procedures that enlist the Dean's office in resolving difficult matters.

Changing advisors

A student may change research advisors at any time in the program. Typical reasons for such changes are shifts in research interests away from the advisor's area or difficulties in advisor-student communication. The process of changing advisors will generally involve:

- soliciting a new advisor (typically done confidentially and with advice from the departmental ombudsperson),
- being accepted by that individual,
- determining how to discuss the desire for a change with the prior advisor,
- giving the prior advisor sufficient opportunity to discuss the situation (and potentially ways to address any concerns leading to the desire to change), and
- determining with the prior advisor and the Department what should be done to finish work in the former group and provide a smooth transition, similar to what would be expected leaving other types of jobs.

Students who are considering a change of advisors are encouraged to seek confidential advice on the details of these steps by consulting the Associate Head. Note that prospective advisors should generally keep discussions of change of advisor confidential until the student's decision is final and the Department Head has approved of the change.
Leaves of Absence

In certain circumstances such as health problems or changes in family circumstances, students may wish to consider a brief leave of absence from graduate study. Details about whether and how to pursue this option are available by consulting Valerie Bridge or the GPC Co-Chairs.

Time Off

Graduate students in the department supported throughout the academic year and summer months typically may take two weeks of time off per year, in addition to university holidays. The timing and length of any time off must be approved in advance by the advisor, before any travel commitments are made. If a student wishes to be away for more than two weeks over the course of a year, he/she must have prior approval from his/her advisor along with the department business manager and/or the department head.

Before any absences, the student must discuss with the supervising faculty member(s) ways to ensure that his/her progress is satisfactory and that research and/or teaching responsibilities can be met satisfactorily. Students with TA responsibilities are expected to be on campus to attend any required TA training.
**Summary of Timeline for Completion of Ph.D. Requirements**

This timeline is based on the typical time to complete the Ph.D. of 5-5.5 years, given timely completion of these requirements along with good progress in research. Variations occur in exceptional circumstances.

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<tr>
<th>1st Semester</th>
<th>2nd Semester</th>
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<tr>
<td>ICC work for 15-30 hours to reach Category 3 and/or to satisfy ICC requirement of 15+ hours of training concurrent with a TA assignment for those in Category 2 or Category 3</td>
<td>ICC work for 15-30 hours to reach Category 3 or concurrent with TA assignment for Category 2 or 3</td>
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<tr>
<td>TA requirement typically completed</td>
<td>Commitment to research advisor by mid-semester</td>
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<th>3rd Semester</th>
<th>4th Semester</th>
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<tr>
<td>English Language Proficiency completed by beginning of semester</td>
<td>Course requirement completed</td>
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<tr>
<td>Advisory Committee formed by mid-semester</td>
<td>Research progress report completed, including poster, written report, and oral exam</td>
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<td>Formal seminar completed</td>
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<td>Attainment requirement completed</td>
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<tr>
<th>5th Semester</th>
<th>6th Semester</th>
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<tr>
<td>Original proposal topics due</td>
<td>Original research proposal completed, including written report, presentation, and oral exam</td>
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<td></td>
<td>ABD status achieved</td>
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<table>
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<tr>
<th>7th Semester</th>
<th>8th Semester</th>
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<tr>
<td>ABD committee meeting, usually to review progress since 4th semester</td>
<td>Dissertation research</td>
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<tr>
<th>9th Semester</th>
<th>10th-11th Semester</th>
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<tr>
<td>ABD committee meeting, typically to review tentative thesis outline</td>
<td>Dissertation research and writing</td>
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