

Graduate Student Procedures



CHEMISTRY
COLORADO STATE UNIVERSITY

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Mission Statement:

Students who earn the Ph.D. in Chemistry must demonstrate competency in each of the following three areas. Each is explicitly evaluated at both the second year preliminary candidacy exam and the final Ph.D. defense.

1. Original research

All successful Ph.D. recipients must demonstrate a body of independent, original research that ultimately comprises the dissertation. Successfully performing research is the intrinsic fabric of a Ph.D. degree.

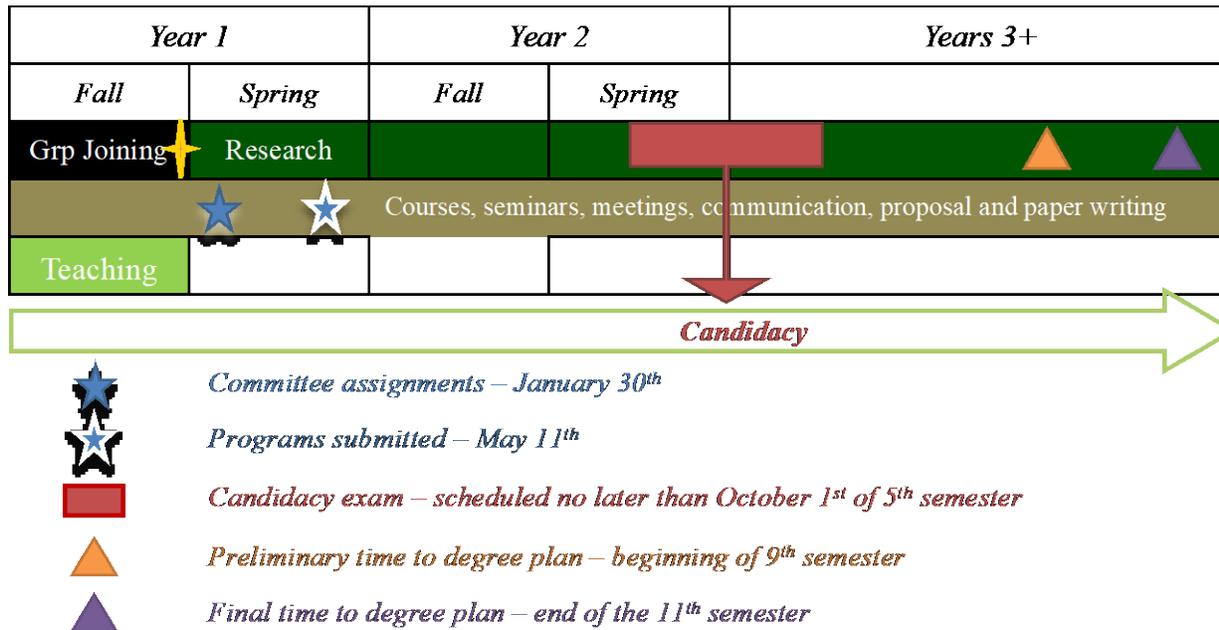
2. Formulation of ideas that generate enthusiasm

In virtually any professional setting a Ph.D. chemist must create new ideas, describe the ideas succinctly, and convince others that the ideas are worth pursuing.

3. Communicating science effectively in an interdisciplinary world

Critical thinking, oral and written communication skills and background knowledge all comprise essential attributes of a Ph.D. chemist.

The graduate program is organized with sufficient flexibility that areas can tailor studies to optimally prepare individual students for their future careers. Below is a timeline that shows the minimum program requirements.



Students must meet all Department of Chemistry and CSU Graduate School requirements to earn the Ph.D. in Chemistry.

I. Graduate School Requirements for the Ph.D. (updated 08/15/2019)

1. 72 total credits at the 400-level and above;
2. Program of study – selection of advisor and degree committee (GS-6 form);
3. Preliminary examination (GS-16 form);
4. Final examination (GS-24 form);
5. Thesis/dissertation (GS-30 form);
6. Application to graduate (GS-25 form);
7. Continuous registration from the time of first enrollment through the graduation term. If graduating in summer, registration in a course or CR is required.

II. Department Requirements for the Ph.D. in Chemistry

A. Ph.D. Program Plan

In consultation with their advisor(s) students select either an area-based program plan or develop an individualized one that satisfies the three competencies summarized in the mission statement. Students following an area-based program plan must inform the GOC of the decision no later than the last day of spring semester of the first year. Individualized plans must be comparably rigorous to area-based plans and must include assessment criteria. Students must submit program plans to the GOC (Graduate Operations Committee) for approval with sufficient time for review and revision by the last day of spring semester of the first year. Once approved, the student's program plan will be added to the file and available by request from the Graduate Program Coordinator (currently Kathy Lucas). The GOC will monitor the progress of each student through either any area-based programs. Faculty advisors are responsible for monitoring student progress for students with individualized program plans and must provide regular updates to the GOC as requirements are met. More detailed descriptions of each competency are given below.

- 1. Original research:** The quality and quantity of original research contributions will be assessed by the student's degree committee throughout the program, but particularly at the second year preliminary candidacy exam and the final thesis defense.
- 2. Formulation of ideas that generate enthusiasm:** This skill can be developed and demonstrated through various activities. Pre-candidacy these might include satisfactory performance in a proposal writing class, as well as the written and oral portions of the candidacy exam itself. Post-candidacy, competency should be enhanced. Demonstrations include, for example, passing an advanced proposal writing class, e.g., CHEM702, taking the lead on submitting a patent disclosure, development and submission of an external proposal to a federal agency or company, or development of a business plan. Area-based program plans provide guidelines for fulfilling this requirement (see supplementary information). Individualized program plans must clearly specify how the requirement will be fulfilled.
- 3. Communicating science effectively in an interdisciplinary world:** This competency is multi-faceted, and is developed through multiple avenues, described below. Area-based program plans provide guidelines for fulfilling this requirement (see supplementary information). Individualized program plans must clearly specify how the requirement will be fulfilled.

Fundamental background knowledge is primarily developed through coursework. A minimum of 10 credits of regular coursework, i.e., not dissertation, thesis, seminar, or other unspecified credits, are required, at least three of which must address subject matter outside the chosen area of specialization. Individualized additional coursework requirements may be added by the student's advisor(s) and/or degree committee. Passing grades are required. See the [Graduate School Bulletin](#) for details. Students who wish to transfer graduate coursework from another university should consult the FAQ for detailed procedures.

Critical thinking skills and advanced background knowledge including important literature in the field are addressed in various ways, including, but not limited to research reports, seminar reports, courses, and cumulative exams. The emphasis varies by program.

Oral communication skills are developed and demonstrated through formal seminars (pre-and post-candidacy), an oral presentation during the candidacy exam, and a public seminar at the final defense.

Written communication skills are demonstrated through a written document associated with the candidacy exam as well as the final dissertation.

Other requirements

- To facilitate effective teaching, the department requires one course designed to prepare students for their GTA position (CHEM 751, Methods of Chemistry Laboratory Instruction). This course is offered only in the fall semester.
- At least one semester of Supervised College Teaching (CHEM 784).
- Integrity and ethics are critically important in research. Students must take and pass an approved responsible conduct in research course no later than their 4th semester in residence (see <https://vprnet.research.colostate.edu/RICRO/rcr/courses-and-education/> for approved courses). The chemistry focused course, CHEM 601, is typically offered in the spring.

Students must also complete online responsible conduct training module (see, <https://vprnet.research.colostate.edu/RICRO/rcr/training-and-certification/>). Students are encouraged to complete responsible conduct training by the end of the second semester of the first year, but no later than the end of the second year.

B. Research Advisor

The GOC serves as temporary *academic* advisor for all incoming students. Selection of a permanent *research* advisor is a significant decision, which clearly impacts a graduate student's career. The Department of Chemistry has developed group-joining procedures designed to promote informed student choice in the advisor selection process, and to identify good student-advisor matches. Informed choice means that students consider a broad range of research advisors, and that they develop in-depth knowledge of several research programs. This breadth of knowledge of the Department's research resources facilitates optimal use of those resources during the graduate career. The desire for good student-advisor matches arises through *mutual agreement* between student and potential advisor. Such agreement is a pre-requisite to actually joining a research group. In some cases, maximizing overlap of student/advisor mutual interest requires student flexibility in group choices.

The formal procedure for choosing a research advisor/group is provided for incoming students and explained during orientation.

Requesting research groups. During the week following the third rotation students finalize their preferences for research groups. Students are encouraged to contact the faculty members whose groups they are most interested in doing research. Frank discussions between students and faculty are encouraged. By Friday of this week, students provide the GOC with a list of no fewer than three groups they would like to join. Students may include groups with which they have not rotated. Student discussions with faculty should ensure that their choices will not surprise faculty members.

Assignment of research groups. The GOC will create a master list of student preferences for distribution to the faculty, who will then submit a ranked list of students they wish to take into their groups. Based on the lists, the GOC will assign groups where student-advisor overlap is obvious, and will facilitate discussion between faculty members where there are conflicts. The GOC will make every attempt to assign students to their first choice of research group, provided that the faculty member has listed the student as one of his/her top two choices. Discussions involving the Executive Committee will be initiated for any situation where a faculty member wishes to recruit more than two students to their group. Ultimately, group joining represents an agreement between student and advisor—the role of the GOC and Executive Committee is to mediate discussions as necessary. The GOC will inform all students simultaneously about group joining decisions.

To remain in good academic standing, all students must have a research advisor. If a faculty member is unwilling to continue as a student's research advisor or if a student wants to change research groups, the GOC will resume the role of academic advisor (in keeping with graduate school policy), but is not obligated to take over the role of research advisor. The student is responsible for selecting a new research advisor, by

mutual agreement with that faculty member. Failure to do so in timely fashion will result in dismissal from the graduate program.

C. Degree Committee

Degree committees should consist of at least four faculty members (advisor, two from chemistry, one out of department). Non-advisors shall constitute a majority of the committee; for co-advised students, this necessarily implies a committee with more than four faculty members. Students should select potential committee members in consultation with their advisor. The GOC assigns committees with respect to research area, ensure both depth and breadth on committees, and strive toward equality in faculty committee assignments.

The out-of-department committee member is selected by the student in consultation with their research advisor, and must be approved by the Dean of the Graduate School. Note that any faculty members with a joint appointment in Chemistry (even zero-time) are not eligible to serve as out-of-department members. Likewise, faculty members from departments where the research advisor has a joint appointment are not eligible.

For the preliminary candidacy exam, committee chair duties temporarily shift to an in-area degree committee member, rather than the research advisor. This chairperson is specified at the time of committee assignment. For program plans with a written post-candidacy proposal requirement, the in-area faculty member also serves as the proposal reader.

All first year students provide the GOC with a degree committee nomination form by January 30 of their first year. The form should list, in order of preference, four in-area chemistry faculty members and three out-of-area members (also in Chemistry). The research advisor(s) should **not** be listed. Classification of in- and out-of-area faculty should be done in consultation with the chosen research advisor(s), and be specific to each student's thesis project. Every effort will be made to honor student priorities, while considering equal distribution of faculty committee assignments. The complete degree committee must be determined by the time the GS-6 form is due. The GS-6 form, Program of Study, must be filed with the Graduate School before the time of the fourth regular semester registration, which occurs in the latter half of the third semester, usually October for students matriculating in the fall.

D. Preliminary Examination

The preliminary examination—a Graduate School requirement—determines whether a student has the research aptitude, background knowledge, critical thinking, and oral and written communication skills to continue toward the doctorate. That is, the student possesses the attributes described in the mission statement and program plan (II.A). Briefly, a written report is submitted to the degree committee, an oral presentation is given by the candidate, there is a question and answer discussion between the committee members and candidate, and the committee deliberates regarding the acceptability of the performance. The written report should aspire to the standard of a mainline journal article in the student's research area. Students are strongly encouraged to meet with their advisors regarding the format and content of the preliminary exam report. During the exam itself, the committee looks for the student's ability to extend beyond the data at hand to identify the "next steps" in the research project, projected outcomes for planned experiments, potential pitfalls in planned research, and possible alternate solutions. [The process is described in detail on the chemistry department website \(http://www.chem.colostate.edu/graduate-students/preliminary-exam-information/\).](http://www.chem.colostate.edu/graduate-students/preliminary-exam-information/)

E. Progress Toward the Degree

The fundamental charge to the student's degree committee is to monitor student progress towards the degree, providing assistance and evaluation along the way. Traditionally, the preliminary exam is the first

time that the entire committee meets to discuss a student's progress toward the Ph.D. degree, although such meetings may be called at any time (by either students or committee members).

As it is usually the first close scrutiny of student performance, the preliminary examination may spotlight particular weaknesses that the committee feels may impede future progress. Often these issues are not sufficient to warrant failing the exam, but the committee may nonetheless ask that they be addressed. To ensure adequate progress, the committee has wide latitude in defining "progress," and imposing remedies. In general, evaluation criteria follow along the four themes tested at the preliminary examination.

After the preliminary oral exam, the degree committee may establish a timeline for future meetings to ensure that progress toward the degree. Timelines may range from months to years (e.g., the next meeting could take place at the student's Ph.D. defense). At one or more such meeting(s), the committee may require a student to present and defend an oral presentation on his/her research (or a specific aspect thereof). The preliminary exam committee chair is responsible for communicating this timeline to the student, in writing, following the exam. A copy of the report is placed in the student's file.

The degree committee may require that a student satisfactorily complete additional coursework. The additional coursework must be added to a student's plan of study and documented in a memo placed in the student's file. The resulting amended GS-6 form occurs when filling out the GS-25 (application to graduate).

At any time, a student's Ph.D. degree committee may determine that the student is making insufficient progress toward earning the doctorate, and dismiss the student from the Ph.D. program. Generally this determination would be made following a hearing on the specific issue(s) involved.

For committees to provide the most support for student development, the GOC strongly recommends that students:

- Meet with committees (either individually or as a group) at least once a year to update the committee on their progress towards the degree.
- Invite degree committee members to their literature, research, or independent proposal presentations. These invitations should be distributed as soon as the presentation is scheduled, and timely reminders should be sent.

F. Degree Completion Plan

The Chemistry Department is committed to facilitating timely degree completion for all Ph.D. students. Given current national and Department norms, it is expected that students will earn a degree by the end of twelve semesters in residence. Consistent with this goal, no student beyond the 12th semester will be guaranteed departmental support (e.g., in the form of a GTA).

To ensure that students approaching this deadline are on track, a Preliminary Degree Completion Plan must be distributed to the student's committee and filed with the Graduate Coordinator by the beginning of the ninth semester in residence. [The form may be found on the chemistry department website.](#) As this plan demonstrates that a student's degree progress is on schedule, it is a prerequisite for participation in the on-campus job interview program.

Any student intending to remain in the Ph.D. program into the 12th semester must also file a Final Degree Completion Plan, which is due before the end of the 11th semester in residence. [The form may be found on the chemistry department website.](#)

The completed Final Degree Completion Plan should be circulated to the degree committee. If the student and a majority of the committee - including the research advisor - agree that the plan is viable, the completed form should be returned to the Graduate Operations Coordinator, and no formal committee meeting is

required. If a majority of the committee (or the research advisor) disagrees with the plan, the student must schedule a formal committee meeting to discuss his/her progress in detail. That meeting must take place before the end of the 11th semester, and at its conclusion an acceptable Final Degree Completion form should be submitted.

Any student remaining in the program beyond the 12th semester who does not have a Final Degree Completion form on file will be in jeopardy of losing his/her good standing, and *will not be supported on Department GTA funds under any circumstances.*

It is expected that the target defense date represents a realistic deadline for dissertation/thesis defense. One extension of the defense date is permitted, if a majority of the committee members (including the research advisor) agree.

G. The Ph.D. Dissertation

The final Ph.D. dissertation should be prepared in accordance with current graduate school policies and regulations. It must be submitted to the degree committee *in completed form* no later than **two weeks** before the final oral examination. To be considered *complete*, the dissertation must include all chapters and data which the student and advisor agree are required to fully describe the research project. No additional experiments or inclusions should be planned or ongoing at the time of submission, unless they are not intended to be included in the final document. Many modern research projects involve substantial contributions from several coworkers, often resulting in joint publication. In such cases, each chapter in the dissertation must clearly delineate work actually done by the student from that done by co-workers on the project.

Additional information on thesis format and submission can be found here including electronic submission to ProQuest/UMI:

<http://graduateschool.colostate.edu/for-current-students/completing-your-degree/thesis-dissertation/>

H. Final Oral Examination

Students present a public seminar on the thesis work, followed by a private examination by the degree committee. A signed GS-24 form must be submitted to the Graduate School **within two working days** after the exam. The time and place of the exam must also be posted no later than one week prior to the exam. Students should submit their dissertation title to the Graduate Program Coordinator for preparation of dissertation notice.

III. Check-Out Procedures

Ph.D. students must provide a copy of their final, corrected thesis to their thesis advisor and any member of their degree committee who requests it. In addition, some advisors may require additional thesis copies from their students. Students must return to the advisor **all** intellectual property (i.e., data, spectra, chemicals, apparatus, disks, notebooks, and all other devices and equipment being utilized in the research project) associated with their research at Colorado State University. They must also leave their lab/work spaces in clean and safe condition for future/incoming researchers.

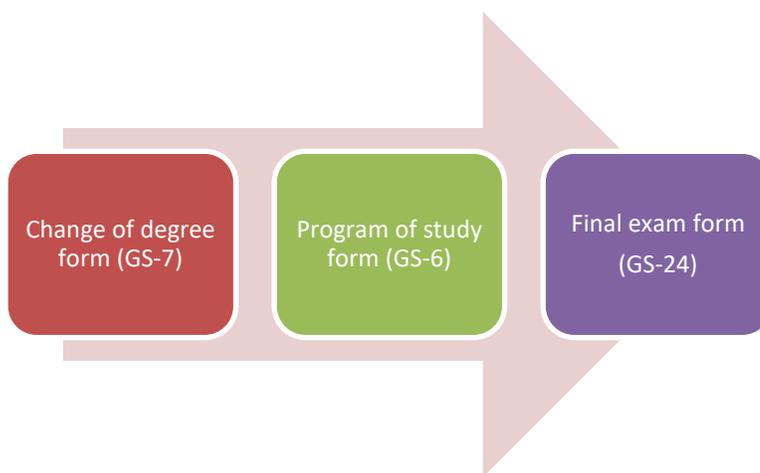
Students who fail to comply with these requirements or who fail to complete the departmental exit form may, at the behest of their advisor or the department chair, have their transcripts put on hold at the Office of

Admissions and Records, and/or will not receive their degrees until proper check-out procedures from the department and research group are followed.

IV. Changing Degree Program

Students who decide to change from a Ph.D. degree to a M.S. degree program must submit the GS-7 (Request for Change of Department and/or Degree and Program) and GS-6 (Program of Study) forms to the Graduate School. These forms can be found on-line. The GS-6 form should include only 30 total credits and contain at least 12 credits of coursework credits. The M.S. degree committee comprises at least the advisor, one in-department faculty member and one out-of-department faculty member. [Information about the MS program requirements is found here.](#)

For students who have passed the Ph.D. candidacy exam, this exam fulfills the M.S. final exam. In this case, the GS-24 form should be signed by the current degree committee and dated with the same date as the candidacy exam occurred. If the student has not passed the Ph.D. candidacy exam, then a public presentation followed by private exam by the degree committee must be completed.



V. Graduate Teaching Assistantships (GTAs)

All students employed as GTAs *must* continue to register for CHEM 784 (Supervised College Teaching) every semester they serve as GTAs, *except* for summer. Failure to register will result in loss of the GTA position and associated financial support.

All GTA positions are awarded by the Department at the request of the advisor. A GTA appointment is a professional-level appointment with a serious responsibility to represent the Department in an important and highly visible role within the University community. The department is committed to ensuring that all chemistry courses meet departmental, university-wide, and state-mandated objectives. As such, the role of a GTA in the classroom extends well beyond direct relationships with students; it also reflects All University Core Curriculum (AUCC) requirements, departmental and program goals, and best practices within the field of chemistry education. Normally, the Department makes GTA assignments on a semester-by-semester basis. Documented unsatisfactory performance of GTA duties in one semester, regardless of whether or not a grade of "U" is awarded in CHEM 784, may affect a student's ability to obtain future GTA positions, thus resulting in loss of stipend and tuition support from the Department. Students are forbidden from working for pay as 3rd-party tutors in classes that they also serve as a GTA.

VI. Guidelines for Terminating the Research Advisor/Graduate Student Relationship

The [CSU Graduate and Professional Bulletin](#) states that: "Pursuant to State Statute, C.R.S. 24-19-104, all graduate assistants are 'employees at will' and their employment is subject to termination by either party at any time. The Provost/Academic Vice President must review and approve any recommendations concerning the termination of graduate assistants on any grounds, except for terminations at the end of the stated employment period. The provisions of this section shall not be interpreted to authorize the termination of any graduate assistant for any reason that is contrary to applicable federal, state or local law."

Most graduate students in the Department of Chemistry at CSU are assigned an advisor in their first year and remain with that advisor for their entire graduate career. However, the faculty advisor/graduate student relationship may be terminated because of dissatisfaction by either the student or the faculty advisor. In either case, it is important that both parties respect the needs of the other. The following procedure is designed to accomplish this.

1. Termination by Advisor

If a faculty member is dissatisfied with the research efforts of a student, it is his/her prerogative to terminate the relationship. The decision to terminate the advisor/student relationship may be precipitated by various events, including, but not limited to:

- disruptive behavior;
- failure to make satisfactory progress toward the dissertation as determined by the advisor and/or the degree committee;
- scientific misconduct;
- unethical behavior;
- poor scholarly attitude; or
- poor performance in laboratory and/or course work.

To terminate the advisor-student relationship, the research advisor must notify the student, the student's degree committee, and the department chair in writing, giving reasons for the dissatisfaction in performance. The faculty advisor may elect to allow a probationary period, to allow the student to improve, or may decide upon immediate dismissal.

The advisor must keep the student on the payroll for 30 days after the notification is delivered or until a new research director puts the student on his/her payroll (whichever is shorter). If the student is terminated early in the semester, the student's advisor, the department chair, and a member of the GOC acting as a mediator, will meet to determine a reasonable compromise regarding possible further financial obligations on the part of the advisor and/or the department. The mediator will also help define the student's status, vis-à-vis hourly employment, registration for classes, the Graduate School, *etc.* Reasonable efforts will be made to have this meeting within the 30-day time period.

Because a graduate student's degree committee is charged with determining whether the student is making satisfactory progress toward a degree (*see* section II.C), the student and/or the advisor may request a meeting of the student's degree committee to discuss the situation. According to the [CSU Graduate and Professional Bulletin](#), the meaning of satisfactory progress "clearly extends beyond course work performance and involves the making of a collective judgment on the part of the committee." Thus, under certain unusual circumstances, the degree committee may recommend immediate dismissal of a student.

It is the student's obligation to turn over all intellectual property (*i.e.*, data, spectra, chemicals, apparatus, disks, notebooks, and all other devices and equipment being utilized in their research) arranged in a manner that will allow the research director to continue the work. The student must also turn in all keys to the Chemistry Main Office. If these materials are not turned over within one week of the notification of

termination date, the remaining salary obligation of the research director is canceled and any pay from a new research director or the department will be held in escrow until the above obligations are met.

2. Termination by Student

To terminate the advisor-student relationship, the student must give the faculty advisor, the degree committee, and the department chair 30 days written notice, providing reasons for leaving the research group. During this time the research project must be brought to a point where it can be easily passed to another individual. All intellectual property (*i.e.*, data, spectra, chemicals, apparatus, disks, notebooks, and all other devices and equipment being utilized in their research project) must be returned to the advisor's research areas and keys allowing access to the research group areas must be returned to the Chemistry Main Office before the student can join another group and be put on another faculty member's payroll.

Department Obligation

The chemistry department recognizes that the student-advisor relationship is a crucial element in the educational experience of graduate students. For this reason, a chemistry graduate student without a research advisor at CSU is considered to not be in good academic standing in the department. The chemistry department is under no obligation to provide financial support, laboratory space, or any other educational materials for a student who is not in good standing.

VII. Family Medical Leave Policy for CSU Chemistry Department Graduate Students

Under CSU's Family Medical Leave Policy, any graduate student who has been employed full time for at least twelve (12) months is eligible for unpaid leave (up to 12 weeks) for any one or a combination of the following reasons: (a) The birth of a child, and to care for the newborn child (leave must be completed within twelve (12) months of the date of birth); (b) The placement of a child for adoption or foster care with the employee and to care for the newly placed child (leave must be completed within twelve (12) months of the date of placement); (c) To care for a spouse, child, or parent with a serious health condition; and (d) Because of a serious health condition which causes the employee to be unable to perform one or more of the essential functions of his or her position. (Refer to <http://www.facultycouncil.colostate.edu/files/manual/appendic.htm> for further details regarding the University's Family Medical Leave Policy.)

The Chemistry Department may provide for such Family Medical leave to be paid for students who are in good standing in the graduate program in chemistry and who have not yet defended their thesis or dissertation. In keeping with University policy regarding Family Medical leave, graduate students must submit requests for paid FM leave in writing, using the "Chemistry Graduate Student Paid Family Medical Leave Request Form" and the "Certification of Health Care Provider" forms, which follow this description. Such requests should be submitted the Chair's Office of the Chemistry Department as soon as practicable, and preferably at least thirty (30) days prior to the requested start date, to allow the Department the maximum opportunity to provide for coverage of responsibilities.

Students who qualify for paid Family Medical leave will be paid at their normal rate during the approved leave period.