

Graduate Student Procedures

Department of
Chemistry



Tables of Contents

Mission Statement.....	3
Ph.D Program Plan.....	4
Other requirements	5
Degree Committee.....	6
Preliminary Examination.....	6
Progress Toward the Degree.....	7
Degree Completion Plan.....	7
The Ph.D Dissertation.....	8
Final Oral Examination.....	8
Check-Out Procedures.....	8
Changing Degree Program	9
Graduate Teaching Assitantships	9
Guidelines for Terminating the Research/ Grad Student Relation	11
Departmental Obligation.....	11
FMLA.....	11

Mission Statement:

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

1. Original research

Successfully performing research is the intrinsic fabric of a Ph.D degree

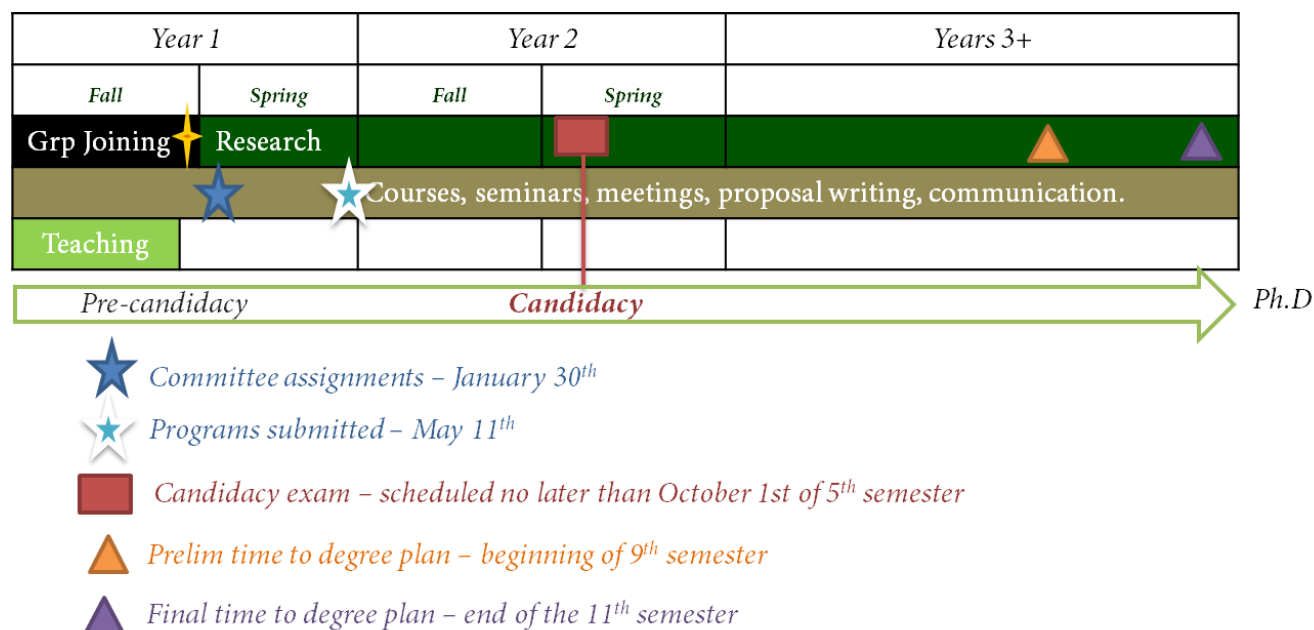
2. Formulation of ideas that generate enthusiasm

In virtually any professional setting a Ph.D chemist is required to 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 are all 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 minimal program requirements.



To earn a Ph.D in Chemistry, the CSU Graduate School and Chemistry Department requirements must be met.

I. Graduate School Requirements for a Ph.D

1. 72 credits
2. Program of study – selection of advisor and 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 a Ph.D in Chemistry

A. Ph.D Program Plan

In consultation with their advisor(s) and thesis committee, students will either select an area-based program plan or develop an individualized one that also satisfies the three competencies summarized in the mission statement. All plans must include assessment criteria. Individualized plans must be comparably rigorous to the area-based ones, and must be submitted to the GOC (Graduate Operations Committee) for approval no later than the last day of spring semester of the first year. Once approved, all program plans will be available on the department website. The GOC will monitor the progress of each student through either an area-based or individualized program. 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 thesis 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 a number of paths. 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, 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.
3. **Communicating science effectively in an interdisciplinary world:** This competency is multi-faceted, and is developed through multiple avenues.

Fundamental background knowledge is primarily developed through coursework. A minimum of 10 credits are required, at least 3 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 thesis committee. Passing grades are required. 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 cumulative exams, research reports, and in-depth discussions of seminars presented by visiting scholars. The emphasis on each varies by program. Current options are summarized here.

Oral communication skills are developed and demonstrated through formal literature 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 thesis.

Other requirements:

- To facilitate effective teaching, the department offers one course designed to prepare students for their GTA position (CHEM 751, Methods of Chemistry Laboratory Instruction). This course, offered only in the fall semester, is required of all graduate students.
- At least one semester of Supervised College Teaching (CHEM 784).
- Integrity and ethics are important in research. To learn more about this, students are required to take 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 offered every spring.

Regardless of which course you participate in, an on-line training module is also required (see, <https://vprnet.research.colostate.edu/RICRO/rcr/training-and-certification/>). Students are encouraged to enroll no sooner than 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 overall objectives of the group-joining procedures are to promote informed student choice in the advisor selection process, and to identify good student-advisor matches. Informed choice means that students are cognizant of all possible research advisors, and that they have developed 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 because *mutual agreement* between student and potential advisor is a pre-requisite to actually joining a research group. In some cases, maximizing overlap of student/advisor mutual interest might require student flexibility in group choices.

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

Requesting research groups. The week before fall recess will not include rotations to give students time to finalize their preferences for research groups. They are encouraged to contact the faculty members with whom they are most interested in doing research. By the Friday before fall recess, students will provide the GOC with a list of no fewer than three groups they would like to join. They do not have to rotate with a group to list it amongst their options. It is expected that their choices will not surprise faculty members; frank discussions between students and faculty are encouraged.

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 would 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. Students will be assigned 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 would be interested in taking three or more students who

list that person as their top choice. 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

Committees should consist of at least 4 faculty members (advisor, 2 from chemistry, 1 out of department). Non-advisors shall constitute a majority of the committee. The GOC will assign committees with respect to research area rather than division and ensure both depth and breadth on committees as well as strive toward equality in faculty committee assignments.

The out-of-department member is selected by the research advisor and student, and must be approved by the Dean of the Graduate School. Note that any faculty members with joint appointments in Chemistry (even zero time ones) are not eligible to serve as out-of-department members.

For the preliminary candidacy exam, committee chair duties temporarily shift to an in-area faculty member, rather than the research advisor. This chairperson is specified at the time of committee assignment.

All first year students will provide the GOC with a committee nomination form by January 30. 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 faculty 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 out-of-department member will be determined by the students/advisor 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 – this occurs in the third semester.

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; basically, the attributes described in the mission statement and program plan (II.A). Briefly, a written report is submitted to the 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 and then communicate the organization to their committee well in advance of when they submit the 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 here.](#)

E. Progress Toward the Degree

The fundamental charge to a 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 Ph.D./exam 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 committee will establish a timeline for future meetings to make sure that progress is being made. 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 committee may require that a student satisfactorily complete additional coursework. This must be added to a student's plan of study, resulting in the submission of an amended GS-6 form. The GS-6 can only be amended when filling out the GS-25 (application to graduate).

At any time, a student's Ph.D. committee may determine that insufficient progress is being made toward earning the doctorate, and dismiss the student from the Ph.D. program. However, it is very rare that such a determination would be made without allowing the student a hearing on the specific issue(s) involved.

For committees to provide the most support for student development, it is strongly recommended 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 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. In keeping with this goal, no student beyond the twelfth 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 here](#). 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 twelfth semester must also file a Final Degree Completion Plan, which is due before the end of the eleventh semester in residence. [The form may be found here](#).

The completed plan should be circulated to the thesis 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) is unwilling to agree to 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 eleventh semester, and at its conclusion an acceptable Degree Completion form should be submitted.

Any student remaining in the program beyond the twelfth 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 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 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. Submit your dissertation title to the Graduate Program Coordinator for preparation of dissertation notice.

III. Check-Out Procedures

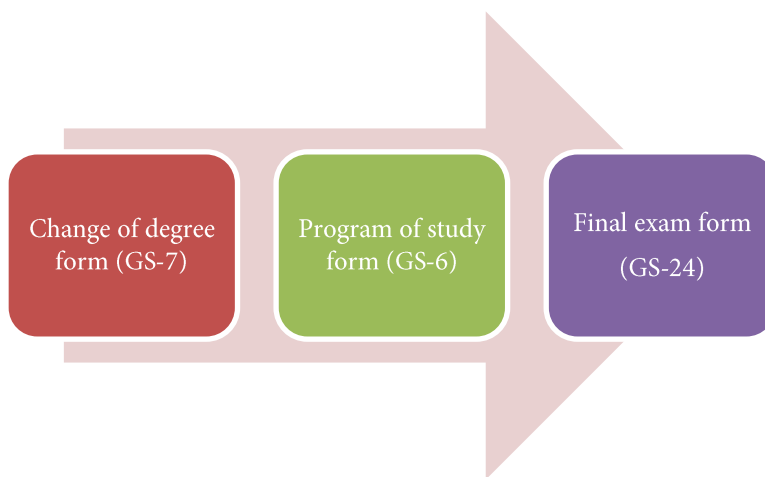
Ph.D students must provide their thesis advisor, and any member of their degree committee who requests it, a copy of their final, corrected thesis. In addition, some faculty members may require additional thesis copies from their students. Students must also return to the advisor all intellectual property (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 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 contain only 30 credits and contain at least 12 credits of coursework credits. [Information about the MS program requirements is found here.](#)

For students who have passed their candidacy exam, the GS-24 form should be signed by the current committee and dated with the same date as the candidacy exam.



V. Graduate Teaching Assistantships (GTAs)

After the teaching requirements are met, 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.

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 an “U” was 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.

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

The CSU Graduate and Professional Bulletin states that: "Pursuant to State Statute, CRS 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. The faculty advisor/graduate student relationship may be terminated, however, 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 thesis 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 thesis 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 received 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 the appropriate GOC member (as a mediator) will meet to work out 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.

Since a graduate student's thesis 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 thesis committee to discuss the situation. According to the CSU Graduate and Professional Bulletin (USPS 775-920) on Guidelines for Graduate Advising and Committee Service, 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." Under certain circumstances, the 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 thesis committee, and the department chair 30 days written notice, giving reasons for leaving the research group. During this time the research project must be brought to a point where it is easily passed on to a new person. All intellectual property (i.e. data, spectra, chemicals, apparatus, disks, notebooks, and all other devices and equipment being utilized in their research project) and keys must be returned to the advisor's research areas before the student can be put on another faculty member's payroll.

Departmental 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 not considered to 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 (FM) 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 (1) or a combination of the following reasons: (a) The birth of a son or daughter, 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 son or daughter 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, son, daughter, 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 FM 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 FM leave, graduate students must submit requests for paid FM leave in writing, using the "Chemistry Graduate Student Paid FM Leave Request Form" and the "Certification of Health Care Provider" forms, which follow this description. Such requests should be submitted to Kristin Berthold in the Main 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 FM leave will be paid at their normal rate during the approved leave period.