

Graduate Program in Chemistry

**Department of Chemistry
University of Massachusetts Amherst**

Program Policies and Regulations

Revised March 2023

I. Doctor of Philosophy (Ph.D.)

A. Ph.D. Degree Requirements

1. Complete the following graduate credit requirements

- a. Successful completion of Chem 891G (Core 1, Fall of the first year) and Chem 897 (Core 2, Fall of the second year). Core 2 is Chem 802 Scientific Writing and Strategic Design Thinking
- b. Earn a satisfactory (SAT) grade in CHEM 891F: Faculty Research Seminars (Fall of the First Year).
During the first semester (orientation week primarily), faculty who are taking graduate students will give a presentation about their research. A 'SAT' grade is obtained by attending all the Faculty Research Seminars.
- c. Earn a satisfactory (SAT) grade in CHEM 891F: Chemistry Seminars (Spring of the first year).
A 'SAT' grade is obtained by attending all the Departmental Research Seminars and submitting a reflection document for each seminar. If there are any scheduling conflicts due to TA assignments or required courses, then the student should contact the course instructor and the Graduate Program Director (GPD) to see how to meet this requirement.
- d. Earn a satisfactory (SAT) grade in Chem 892 every semester.
You are required to register for the group meetings course every semester. A 'SAT' grade means that you fulfilled the requirement. Under exceptional circumstances, the GPD, in consultation with the dissertation advisor, may waive this requirement.
- e. Fulfill the residency requirement.
University regulations require that each Ph.D. student spend a minimum of one continuous academic year in full-time graduate work. You can meet this requirement by (a) registering for at least nine credits per semester in graduate courses (which may include doctoral Dissertation) for two consecutive semesters (Fall/Spring or vice versa) and (b) being physically present on the campus for some part of each week for two consecutive semesters (Fall/Spring or vice versa). Most chemistry students satisfy this requirement in the first year of their academic program.
- f. Fulfill the continuous enrollment requirement.
University regulations require that graduate students maintain continuous enrollment by (a) registering for the appropriate course credits [see section B.1. Student Status for guidance], or (b) by paying the Continuing/Program Fee. The University will withdraw students from the graduate program if they are not registered at the end of the Late Registration Period. Reinstatement requires the approval of the GPD and the payment of a fee.
- g. Fulfill the dissertation credit requirement.
18 credits (cumulative) of CHEM 899 are required for the Ph.D.
- h. Maintain a grade-point average of 3.0 or higher.
- i. Fulfill any course requirements as recommended by the graduate program, advisor, and the dissertation committee.
Graduate students are required to take two graduate-level courses in the Fall of the first year in addition to the Core course and 2-3 graduate-level courses (minimum seven credits from graduate-level courses) in the Spring of the first year. Students should not include 891F, 892, or 899 credits to account for the 7 credits required in the Spring of the first

year. Research advisors and the graduate dissertation committee may recommend additional courses depending on the academic preparation of the student.

2. Have a research advisor by the end of the student's second semester in the program and thereafter

2.1—Advisors: Potential advisors must be members of the graduate faculty in Chemistry. A small number of faculty from related departments have adjunct faculty status and may be candidates as advisors at the discretion of the Head of the Department of Chemistry. Students should consult with the Graduate Program Director (GPD) before they approach adjunct faculty as possible choices. Faculty interested in taking graduate students will present their research in the Faculty Research Seminars.

2.2—Rotation: Each graduate student rotates with three different research groups during the first semester. The duration of each rotation is ~1 month and the start dates for each rotation will be announced at the beginning of the semester. The faculty member determines the format of the rotation and may include attending group meetings, visiting with graduate students in the lab, having individual meetings with the faculty member, and limited research-related activities.

The three lab rotations will be determined by a combination of two labs chosen by the student and the third lab selected by the Graduate Program Director and/or Graduate Program Committee. The order of the rotation will be random and will not necessarily follow the ranking. Changes to rotations (order or names) will not be allowed.

2.3—Advisor Selection Process. After the end of the third rotation, students should discuss the prospect of joining the research group with their prospective research advisor. Students should then submit their top two, ranked choices for research advisor to the GPD. The GPD and Graduate Program Manager (GPM), in consultation with faculty and the Department Head, will finalize the advisor assignments. If a student cannot find a suitable advisor at the end of this process, then the GPD, based on the student's academic performance, will discuss with the student possible pathways for moving forward. They include (a) additional rotation(s) or (b) dismissal from the program.

2.4—Changing Research Advisor: Any request to change research advisor must be submitted to and approved by the Graduate Program Director. The Graduate Program Director may consult with the student's former advisor, student's committee (if already in place), and/or the Graduate Program Committee to facilitate the process.

3. Form a Dissertation Committee

3.1—Timing: End of third Semester (typically Fall semester of the second year)

3.2—Composition of the Dissertation Committee: There will be 4 voting members on the committee. The research advisor will be the chair of the committee. Also, the committee will have two graduate faculty who are members of the Chemistry Department and one member of the graduate faculty from another department, known as the outside member. If the research advisor is not primarily affiliated with Chemistry, then this faculty member must be appointed as graduate faculty in the Chemistry Department, and another committee member will be necessary as the outside member.

3.3—Formation of the Committee: The members of the committee are chosen by the student in consultation with the research advisor. The student will then contact the potential committee members to seek their consent to serve on the committee. The student will then get the electronic approval of the committee members on the requisite form, which is available within the Graduate Student Document Submission Portal, which can be accessed from our department website. After all obtaining approval from all committee members, the GPD will then recommend the appointments to the Graduate Dean.

4. Advance to Candidacy Stage 1: Successfully Defend Prospectus

4.1—Objective: The Prospectus is the first formal statement made by the student about his or her topic of research to the dissertation committee. The dissertation committee will evaluate the student's ability to (a) review and make critical use of the literature, (b) formulate a problem, (c) plan a method of attack and work systematically towards a solution, (d) summarize the material or data, and draw conclusions based thereon and (e) demonstrate scholastic attainment in writing and presenting the results.

4.2—Timing: Before the end of classes in the *fourth* semester (Spring semester of the second year), the student will schedule a meeting of the dissertation committee to present the Prospectus and will submit the prospectus document to the committee via the graduate submission portal two weeks before the scheduled prospectus defense. The prospectus exam should be completed by the end of the *fourth* semester or immediately after that.

4.3—Components of the exam: There are two components to the prospectus exam (1) A written document, which should be submitted to the committee two weeks before the exam and (2) a presentation to the dissertation committee

4.4—Format of the exam: There are four stages of the exam:

1. Pre-defense discussion about prospectus document and student progress (Committee without the student) < 5 min
2. Prospectus Defense. This part of the exam lasts for about 1 – 1.5 h and the committee will ask questions during and after the presentation.
3. Post-defense discussion and decision (Committee without the student) [~1-10 min]
4. Outcome discussion and Feedback (Committee with the Student)

4.5—Evaluation: The committee will evaluate the student on each of the five criteria outlined in 4.1 and the candidate's continued progress in research.

4.6—Possible outcomes: There are four possible outcomes (1) Pass, (2) Conditional Pass, (3) Deferred Decision, and (4) Fail. If the outcome is not a full Pass, then the committee will recommend the next steps to the GPD.

- For options (2) or (3), the committee can recommend specific goals and timelines for the student to meet these goals.
- If the performance is unsatisfactory (4) Fail, then the committee can recommend (a) removal of the student from the program, (b) placement on probation and repeat of the exam, or (c) continuation in the graduate program with a terminal MS degree. If the committee recommends options (a) or (c), then student stipend support will be discontinued.

- The chair of the committee will communicate the results of the exam and the evaluations of the student via the Graduate Student Committee Meetings Report online form to the GPD ***within 1 week*** after the completion of the Prospectus.

4.7—Prospectus Document: Students should follow the format of an NIH R21 proposal. The title signature page should conform to Graduate School Recommendations. On the title page, the word 'Prospectus' should be used instead of "Thesis" or "Dissertation. A template for the Prospectus will be provided to students at the appropriate time or can be obtained by request to the GPD. The prospectus document should be 6 pages in length, excluding the title and reference pages.

The prospectus document and presentation should address:

- Introduction, Specific Aims, Background, and Significance (~ 3 pages)
- Innovation/Intellectual Merit of the Proposal (1 paragraph)
- Proposed Research (~3 pages)
- References should follow the NIH or NSF proposal format

The document should be submitted to the committee via the Graduate Student Document Submission Portal.

4.8—Process for Submission of Prospectus to Graduate School: The approved Prospectus document must be signed by every member of the committee and by the Department Head. The signature page can be signed electronically. A PDF of the signed cover sheet should be submitted via the Graduate Student Document Submission Portal ***within one week*** of the successful completion of the prospectus defense.

5. Advance to Candidacy Stage 2: Successfully defend Original Research Proposal (ORP)

5.1—Objective: The dissertation committee will evaluate the student's ability to independently (a) review and make critical use of the literature, (b) formulate a problem, (c) plan a method of attack and work systematically towards a solution, (d) summarize the material or data, and draw conclusions based thereon and (e) demonstrate scholastic attainment in writing and presenting the results.

5.2—Timing: Before the end of classes in the ***fifth*** semester (Fall semester of the third year), the student will schedule a meeting of the dissertation committee to present the Original Research Proposal and will submit the ORP document to the committee. The ORP exam should be completed by the end of the ***fifth*** semester (Fall semester of the third year) or immediately after that.

5.3—Components of the exam: There are three components to the ORP exam (1) a quad chart that summarizes objectives and aims of the research proposal to be submitted to the committee for approval; the area of focus for the ORP should be different from the area of focus in the student's research group, (2) a written document based on the approved ORP Quad Chart, which should be submitted to the committee 2 weeks before the exam, and (3) a presentation to the dissertation committee.

5.4—Format of the exam: There are four stages of the exam:

1. Pre-defense discussion about ORP document and student progress (Committee without the student) < 5 min
2. ORP Defense. This part of the exam lasts for about 1 h – 1.5 h and the committee will ask questions during and after the presentation.
3. Post-defense discussion and decision (Committee without the student) [~1-10 min]
4. Outcome discussion and Feedback (Committee with the Student)

5.5—Evaluation: The committee will evaluate the student on each of the five criteria outlined in 5.1 and the candidate's continued progress in research.

5.6—Possible outcomes: There are four possible outcomes (1) Pass, (2) Conditional Pass, (3) Deferred Decision, and (4) Fail. If the outcome is not a full Pass, then the committee will recommend the next steps to the GPD.

- The student will advance to candidacy if the performance is satisfactory. For options (2) or (3), the committee can recommend specific goals and timelines for the student to meet these goals.
- If the performance is unsatisfactory (4) Fail, then the committee can recommend (a) removal of the student from the program, (b) placement on probation and repeat of the exam within 60-days, or (c) continuation in the graduate program with a terminal MS degree. If the committee recommends options (a) or (c), then student stipend support will be discontinued.
- The chair of the committee will communicate the results of the exam and evaluations of the student to the GPD **within 1 week** after the completion of the exam by filling out the online form.

5.7—Committee Chair for the ORP: At the ORP defense, a committee member from Chemistry, who is not the dissertation advisor, will chair the meeting. The dissertation advisor can participate in the discussion but cannot vote on the outcome. The student should consult with the advisor to choose the temporary chair and seek the consent of that faculty member before the exam.

5.8—Format of the quad chart and outcome:

A template for the quad chart will be provided in Core Course 2 or upon request from the GPD. The quad chart should be submitted via the Graduate Student Document Submission Portal.

Each committee member has to approve or reject the quad chart. If a committee member rejects the quad chart, then the student should have conversations with the committee member and revise the quad chart accordingly.

5.9—Format of the Original Research Proposal Document: The ORP document will follow the same format as an NIH R21 proposal

- a. Use the same template as for Prospectus (NIH R21 format, 6 pages)
- b. The ORP document should be 6 pages in length, excluding the title/table of content pages.
- c. Use title and signature pages in line with the signature page recommended by Chemistry. It is similar to the prospectus page but will have an additional line for the temporary chair.
- d. Use 'Original Research Proposal' instead of "Thesis" or "Dissertation."

- e. The references should follow the NIH or NSF format.
- f. Include a budget for your proposed research (not counted in the 6-page limit)
- g. Include your current CV (not counted in the 6 page limit)

The proposal document should expand on the quad chart (and the questions that are addressed in the quad chart) and include the overall objective, statement of need, central hypothesis of the proposal, specific aims, expected outcomes and their importance, and potential problems and solutions.

5.10—Conclusion of the exam and advancement to candidacy: After successful defense of the ORP, a PDF of the title page of the approved ORP document with signatures should be uploaded on the Graduate Student Document Submission Portal.

6. Satisfactory Progress

- (a) Achievement of minimum grades in required courses and maintenance of 3.0 overall GPA.
- (b) Completion of the various requirements of the program by stipulated deadlines.
- (c) Attainment of a research advisor by the end of the student's second semester in the program and thereafter.
- (d) Continued progress in research. Starting at the end of the second year, each student should submit an annual progress report and individual development plan to their committee by June 30th. The committee should provide written feedback by August 31st.
- (e) Starting in their second year, students will also submit an individual development plan for discussion and approval to their mentor(s) by June 30th.

A student should meet all of these attributes to maintain satisfactory progress.

7. Successful Data Defense

7.1—Objective: To determine whether sufficient progress has been made in dissertation research in data collection and analysis for the candidate to proceed to plan for the final defense. The dissertation committee will also evaluate the student's ability to (a) review and make critical use of the literature, (b) formulate a problem, (c) plan a method of attack and work systematically towards a solution, (d) summarize the material or data, and draw conclusions based thereon and (e) demonstrate scholastic attainment in writing and presenting the results.

7.2—Timing: This meeting may occur at any time in the academic year, but should typically happen *at least **FOUR WEEKS** before the final defense.*

7.3—Format of the exam: There are four stages of the exam:

- 1. Pre-defense discussion about student progress (Committee without the student) < 5 min
- 2. Data Defense. This part of the exam lasts for about 1 h – 1.5 h and the committee will ask questions during and after the presentation.
- 3. Post-defense discussion and decision (Committee without the student) [~1-10 min]
- 4. Outcome discussion and Feedback (Committee with the Student)

7.4—Format of the Meeting: The student presents the proposed organization and overall plan for the Dissertation. The presentation should include studies completed, data collection and analysis, and plans for the completion of the Dissertation.

7.5—Evaluation: The committee will evaluate the student on each of the five criteria outlined in 7.1. The committee will also assess if the student has made sufficient progress in research to justify his or her advancement to the final defense. The chair of the committee will communicate the results of the exam and evaluations of the student to the GPD ***within 1 week*** after the completion of the exam by filling out the online form.

7.6—Possible outcomes: (1) advance to final defense (2) advance to final defense after completion of specific work, (3) cannot advance to final defense, and (4) insufficient progress to continue in the program.

8. Successful Defense of Thesis

8.1—Objective: The committee will evaluate if the Dissertation (written and oral defense) meets criterion set by the graduate school: "The Dissertation in its completed form will be judged largely upon the ability of the candidate to review and make critical use of the literature; to formulate a problem, plan a method of attack and work systematically towards a solution; to summarize the material or data, and draw conclusions based thereon. Scholastic attainment in writing and presenting the results of the study will be crucial. The goal of the Dissertation is to contribute to knowledge. It should be of publishable quality."

8.2—Timing: When the student is ready to defend his or her Dissertation. The final defense should be scheduled on a working day and during normal work hours and must occur at least seven months after the Graduate School receives the approved Prospectus. The student should take into account the deadlines for notification of the graduate school before and after the exam and submission deadlines for Dissertation and other documents for the desired graduation date. These deadlines are not flexible.

8.3—Notification to Graduate Program Manager: The student should notify the GPM ***at least 45 days before*** the date of the defense. This will allow the GPM to meet the deadlines imposed by the graduate school. If the student does not notify the GPM before 45 days, then the defense will have to be rescheduled.

8.4—Components of the exam: There are two components to the thesis defense exam (1) A written dissertation that meets the current formatting guidelines of the graduate school, which should be submitted to the committee 2 weeks before the exam and (2) a presentation to a public audience that includes the dissertation committee. The regulations change from time to time, so a previous dissertation may not be an accurate model. A copy of the Dissertation should be prepared for each member of the dissertation committee in addition to the copies required by the Graduate School.

8.5—Format of the exam: There are six stages of the exam:

1. Introduction of the student by thesis advisor < 5 min
2. Dissertation Presentation. This part of the exam lasts for about 1 h.
3. Public Question and Answer Session. After the presentation, the committee chair will open the floor for questions from the audience.

4. Closed session with the committee. After the public question/answer session, the committee chair will excuse the audience, and the dissertation committee will meet with the student.
5. Post-defense discussion and decision (Committee without the student) [~1-10 min]
6. Outcome discussion and Feedback (Committee with the Student)

Sections 1-3 are open to the public. Section 4 is open to the committee and interested members of the graduate faculty. When the student's performance is evaluated, only the committee members may vote.

8.6—Evaluation: The committee will assess the student based on the five criteria outlined in 8.1.

8.7—Possible outcomes for oral defense: There are four possible outcomes (1) Pass, (2) Conditional Pass, (3) Deferred Decision, and (4) Fail. If the outcome is not a full Pass, then the committee will recommend the next steps to the GPD. The result of this examination is reported in a timely fashion to the Graduate Program Director, who then notifies the Graduate School.

8.8—Possible outcomes of dissertation evaluation: The committee can accept the dissertation document or can recommend changes that need to be made to the document. These can be formatting changes to meet the graduate school requirements or content changes to meet the standards of the scientific community. The chair of the committee will communicate the results of the exam and evaluations of the student to the GPD ***within 1 week*** after the completion of the exam by filling out the online form.

8.9—Submission of Dissertation: Once the Dissertation is ready for acceptance, the committee members should sign the signature page of the Dissertation using black ink or electronically. The signature page should be printed on acid-free paper and should conform to the format and wording requirements of the Graduate School. The students should follow the guidelines posted by the Graduate School for submission.

B. Duration of Graduate Studies

1. Duration of Department Support

For most students, the Department guarantees support for five years (if necessary) as long as the student maintains satisfactory progress in research, academics, and any teaching duties.

2. Statute of limitations (SOL)

The statute of limitations is the amount of time allowed for completing the graduate program and is stipulated in the admission letter from the Graduate Dean. Doctoral students are given six years to complete the program. If an extension becomes necessary, the student's advisor will need to provide a written justification to the GPD, including a timeline for completion of the remaining requirements.

3. Student Status

Students are considered to be full-time students if they are registered for nine or more credits and part-time if they are registered for eight or fewer credits. For loan deferments, students taking six to eight credits are considered to be half-time students. If a student actively engaged in research or Dissertation (or thesis) production, the Department will certify that the student is a full-time (or half-time) student regardless of the number of credits for which the student is registered.

4. Termination from Ph.D. Studies

The graduate program committee in Chemistry can terminate a student from Ph.D. Studies for any of the following reasons:

1. Failure to make satisfactory and timely progress in meeting the requirements in the Ph.D. degree Requirements in Section A
2. Academic or professional misconduct
3. Reasons for safety (to others or self)

5. Workplace Conflict

During their graduate career at UMass, students may encounter challenging situations within their group or between groups. If the student is comfortable talking about specific circumstances with the research advisor, then the student should contact the advisor to help with the de-escalation of the conflict.

If the student is uncomfortable talking with the advisor or there is a conflict with the advisor, then the student should contact the Chemistry Graduate Program Director. These discussions are confidential. Situations constituting sexual harassment and bullying require the GPD to report to the Office of Equal Opportunity and Diversity, who will help to address the situation appropriately. The GPD will work with the Department Head and other University offices to help students address or de-escalate the situation.

Resources:

1. Confidential conversations with your GPD

Michael Barnes (mdbarnes@chem.umass.edu) *CONFIDENTIAL

2. Ombuds Office - Resolution Services for Conflicts and Concerns

The Ombuds Office helps hundreds of undergraduate and graduate students every year with a wide variety of conflicts and concerns. The Ombuds Office can be particularly helpful in informally mediating disputes between students, or between students and faculty or staff, whether those disputes are academic, work-related, or interpersonal. We can assist with issues of academic honesty and can help you understand the policy and procedures for informal resolutions and formal charges (see the Academic Honesty website).

The Ombuds Office can be reached by calling 413-545-0867 or by sending an email to ombuds@umass.edu. Confidential appointments with an ombudsperson are available by phone, by videoconference, or in-person at our Campus Center location. We are unable to accommodate walk-ins at this time.

3. Dean of Students Office

Dean of Students Office (DOSO) staff can answer questions, advocate on your behalf, and make sure you get the help, resources, and support you need. The DOSO Student Life Team is available to meet with you, listen to your concerns, and assist in developing a comprehensive action plan for your academic and personal success.

Phone: (413) 545-2684 Location: 227 Whitmore, www.umass.edu/dean_students

4. Center for Counseling and Psychological Health

CCPH provides short term individual, couple's and group psychotherapy; psychiatric medication consultation and treatment; psychological assessment (testing); behavioral medicine; and crisis intervention services. We are open from 8:30 a.m. to 4:30 p.m. Monday through Friday and are also available 24 hours a day to provide crisis intervention services and assessment.

Many options for student services: <https://www.umass.edu/counseling/services>

Location A: Bartlett Hall (2nd floor, north), 130 Hicks Way

Location B: 415 New Africa

House, 180 Infirmary Way Phone

Center for Counseling and Psychological Health

Middlesex House • 111 County Circle

Amherst, MA 01003-9255

(413) 545-2337 or (413) 545-0333

5. Equal Opportunity Office and Title IX Coordinators

Ryan K Morse, Interim Director of Equal Opportunity, Sr. Grievance Officer, & Deputy Title IX Coordinator *CONFIDENTIAL

Phone: 413-545-3464 Email: rkmorse@umass.edu
Site: <https://www.umass.edu/equalopportunity/>

Jessi Bond, Center for Counseling and Psychological Health (CCPH) - *CONFIDENTIAL
Phone: 413-545-2337 Email: jsbond@uhs.umass.edu

Becky Lockwood, Center for Women and Community (CWC) – *CONFIDENTIAL
Phone: 413-545-0800 (24/7) Email: rlackwood@umass.edu

Dr. George Corey, University Health Services (UHS) – *CONFIDENTIAL
Phone: 413-577-5000 (24/7) Email: gcorey@uhs.umass.edu

Lieutenant Brian Henault, University of Massachusetts Police Department (UMPD) –
*CONFIDENTIAL Phone: 413-545-2121 Email: brianh@admin.umass.edu

*Please note that staff listed as confidential will not share any information unless they've received permission from the person.

6. GEO (Graduate Student Union)

The union helps to resolve workplace conflicts.

GEO Office, 201 Student Union

Email: geo@external.umass.edu Phone: 413-545-0705

Financial Support and Conditions of Employment (Ph.D)

C. Financial Support during Graduate Studies and Conditions of Employment

1. Sources of support

Students usually are admitted to the Chemistry Graduate Program only if they have financial support as approved by the Department. For most students, this support takes the form of an assistantship provided by the Department. Initially, such assistantships are teaching assistantships, but later in the program, students are typically supported on research assistantships offered by their research advisor's grants. Some students are supported by external sources, such as government scholarships, and some students are supported by assistantships funded by contributions from industry or alumni or from other campus-based sources outside the Department.

Research assistantships are typically funded by faculty grant support. The selection of appointees, terms of contract, and other details of such appointments fall entirely within the purview of the faculty member who is the principal investigator on the grant, subject to Departmental and University regulations.

Students who have adjunct faculty as advisors are not eligible for departmental teaching assistantships and must be supported by their advisors.

Teaching Assistants and Research Assistants are governed by the GEO contract, which is the agreement between the University and the Graduate Employee Organization.

2. Contract Period

The contract period (period of appointment) for TAs and RAs extends beyond the regular semester dates. Since department support is usually year-round, the employment period is, therefore, often a continuous twelve months. January intersession (the break between the fall and spring semesters) spring break, and summer are all part of the appointment or contract period. (The distinction between the contract-period and the duration of a given semester is critical for understanding the policy on vacation and other time off.) While the Department is flexible in setting working conditions, any proposed departure from the terms of the contract should be discussed with the student's supervisor well in advance.

3. Vacation and Time off (GEO Employees)

The GEO contract stipulates both the amount of time eligible to be taken and the need to obtain approval from the student's research advisor – and from the teaching supervisor as well if the student is a T.A. (For details on holidays, vacation, and other time off, refer to the Department's infosheet on the topic or the Graduate School's "Graduate Appointments Policies and Procedures," or to the GEO contract itself.)

4. Workload and limitation on total hours

4.1—US Citizens and Permanent Residents: **40 hours** per week is the maximum for working hours + course credit-hours, excluding dissertation or thesis credits. Work includes any type of campus employment: assistantships, student hourly, work-study, etc.

Financial Support and Conditions of Employment (Ph.D)

4.2—International Students: F1 and J1 visa holders are limited to **20 hours** per week during the **regular semester** for *working hours + credit-hours*, excluding Dissertation or thesis. Work for internationals includes assistantships and student hourly. Work-study is not an option. 40 hours is allowed during January break and summer.

5. Outside Employment

Graduate students appointed as Teaching Assistant or Research Assistant may not accept concurrent employment elsewhere. Any exceptions to this outside-employment restriction must be approved both by the GPD and the dissertation advisor before acceptance of any outside work.

Graduate students should not provide paid tutoring services for any student for whom they have responsibility for grading.

6. Satisfactory Performance as TA or RA, Termination of Support

Non-performance or unsatisfactory performance of TA duties may result in the termination of the contract. Besides performing the assigned duties poorly, examples of unsatisfactory performance may include not appearing to proctor an exam as requested or being away during the contract period without the permission of the TA supervisor.

Similarly, an RA who is not performing adequately in research, who is not committing effort or time in the lab, or who is absent without permission of the advisor is subject to dismissal.

For non-academic dismissals, the graduate program director will follow Article 26 (Discipline and Discharge) of the GEO contract.

7. Safety Training

Before conducting any work in a research laboratory, students must undergo safety training as prescribed by the Department's safety committee. Documentary evidence of the satisfactory completion of this training must be filed with the GPD. Safety training typically includes the lab-safety class during orientation, as well as web-based training provided by the University's Environmental Health and Safety organization.

8. Financial Support for Conference Travel

8.1—Departmental Support: Where faculty research-funds are not available to help defray travel expenses, the Department and Graduate School offer some support for conference attendance. Chemistry Department Travel Grants allow each graduate student a maximum \$800 grant for conference travel. This grant can be used either all at once or for 2 meetings. Students should apply for these funds before travel via the online Graduate Student Travel Grant Application. Applications should include details of the conference and should be approved by the research advisor.

8.2—Graduate School Support: The Graduate School offers travel grants on a rolling basis for application and awards. Students should consult with their research advisor and/or the

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GPD about the application for travel funds. Applications should be submitted to the GPD via the online Graduate Student Travel Grant Application.

9. Department Policies for Students Travelling off-campus (Home Countries, Internships or Vacation)

If students travel to their home country to get a visa or will be away from campus for any other reason, then:

1. If you are an RA, you need to get permission from your advisor before you travel. You need to have a contingency plan if a delay in your return is possible. Please be aware that to comply with federal funding regulations, you may not get paid beyond a specific duration.
2. If you are a TA and you are in a research group, you still need to get permission from your advisor. If you are not in a research group, seek consent from the GPD. We expect you to be on campus on the first day of classes. If your travel is delayed and this will not be possible, please communicate with the GPD and your research advisor as soon as you can. The GPD will consult with the Head, Associate Head, and the instructor to determine the course of action.
3. If you anticipate communication problems (e.g., limited email access) during your stay abroad, please ensure that you have tools to communicate any travel delays promptly. It is your responsibility to update the GPD and your advisor about any travel delays.

II. Master of Science (M.S.)

Chemistry does not admit students directly to an M.S. program. In rare circumstances, with the agreement of the GPD and (if relevant) the student's advisor, a student enrolled in the Ph.D. program may pursue studies leading to the award of M.S. degree by research (Thesis Master's) or coursework M.S. Degree (non-thesis). The Chemistry requirements are in line with those of the Graduate School, and students are advised to study the relevant paragraphs carefully in the Graduate School Bulletin. There is no departmental financial support or stipend for the Master's Thesis or Master's non-thesis terminal degree.

A. Degree Requirements for M.S. with thesis

1. Complete the following graduate credit requirements

- a. Ten (10) credits of CHEM 699 (Master's Thesis)
- b. Coursework in Chemistry for the M.S. Degree with Thesis with at least 21 credits from the following
 - Two semesters of Core Course.
 - Faculty research seminar in the first semester.
 - Research group meeting (CHEM 892) each semester.
 - Any divisional coursework requirements.
 - Electives chosen in consultation with the advisor.
- c. At least 15 of these 21 credits must be taken on a letter-grade basis, and these must include at least six credits earned in the 600 - 800 series (not counting journal clubs, seminars, or group meeting).
- d. Letter-graded courses submitted for the degree must have a GPA of 3.0 or better.

2. Form a Master's thesis committee

The voting members of a Master's thesis committee are the advisor and at least one other member of the Chemistry graduate faculty. The members of the committee are chosen by the student in consultation with the research advisor. If the research advisor is not primarily affiliated with Chemistry, then he/she must be appointed as graduate faculty in the Chemistry Department. The student will then contact the potential committee to seek their consent to serve on the committee. The student will then get the signatures of the committee members on the requisite form, which can be obtained from the Graduate Program Manager (GPM), and submit the completed form to the GPD. The GPD then recommends the appointments to the Graduate Dean.

3. Successful defense of thesis outline (Prospectus)

3.1—Objective: Prospectus is the first formal statement made by the student about his or her topic of research to the thesis committee. The thesis committee will evaluate the student's ability to (a) review and make critical use of the literature, (b) formulate a problem, (c) plan a method of attack and work systematically towards a solution, (d)

summarize the material or data, and draw conclusions based thereon and (e) scholastic attainment in writing and presenting the results.

3.2—Timing: This requirement must be completed and the outline received by the graduate school at least *four months* before the defense of the thesis final oral examination.

3.3—Components of the exam: There are two components to the prospectus exam (1) A written document, which should be submitted to the committee 2 weeks before the exam and (2) a presentation to the dissertation committee

3.4—Format of the exam: There are four stages of the exam:

6. Pre-defense discussion about prospectus document and student progress (Committee without the student) < 5 min
7. Prospectus Defense. This part of the exam lasts for about 1 h, and the committee will ask questions during and after the presentation.
8. Post-defense discussion and decision (Committee without the student) [~1-10 min]
9. Outcome discussion and Feedback (Committee with the Student)

3.5—Evaluation: The committee will evaluate the student on each of the five criteria outlined in 3.1.

3.6—Possible outcomes: There are four possible outcomes (1) Pass, (2) Conditional Pass, (3) Deferred Decision, and (4) Fail. If the outcome is not a full Pass, then the committee will recommend the next steps to the GPD.

3.7—Prospectus Document: Students should follow the format of an NIH R21 proposal. The title signature page should conform to Graduate School Recommendations. On the title page, the word 'Prospectus' should be used instead of "Thesis" or "Dissertation. A template for the Prospectus will be provided to students at the appropriate time or can be obtained by request to the graduate program director. The prospectus document should be 6 pages in length, excluding the title and reference pages.

The prospectus document and presentation should address:

- Introduction, Specific Aims, Background, and Significance (~ 3 pages)
- Innovation/Intellectual Merit of the Proposal (1 paragraph)
- Proposed Research (~3 pages)
- References should follow the NIH or NSF proposal format

The document should be submitted to the committee via the Graduate Student Document Submission Portal.

3.8—Process for Submission of Prospectus to Graduate School: The approved Prospectus document must be signed by every member of the committee and by the Department Head. The signature page can be signed electronically. A PDF of the signed cover sheet should be submitted via the Graduate Student Document Submission Portal ***within one week*** of the successful completion of the prospectus defense.

4. Successful Defense of Thesis

4.1—Objective: The committee will evaluate if the thesis (written and oral defense) meets criterion set by the graduate school: "The thesis in its completed form will be judged largely upon the ability of the candidate to review and make critical use of the literature; to formulate a problem, plan a method of attack and work systematically towards a solution; to summarize the material or data, and draw conclusions based thereon. Scholastic attainment in writing and presenting the results of the study will be crucial. The goal of the thesis is to contribute to knowledge. It should be of publishable quality."

4.2—Timing: When the student is ready to defend his or her thesis. The final defense should be scheduled on a working day and during normal work hours and but must occur at least seven months after the Graduate School receives the approved Prospectus. The student should take into account the deadlines for notification of the graduate school before and after the exam and submission deadlines for Dissertation and other documents for the desired graduation date. These deadlines are not flexible.

4.3—Notification to Graduate Program Manager: The student should notify the GPM at least 45 days before the date of the defense. This will allow the GPM to meet the deadlines imposed by the graduate school. If the student does not notify the GPM before 45 days, then the defense will have to be rescheduled.

4.4—Components of the exam: There are two components to the prospectus exam (1) A written thesis that meets the current formatting guidelines of the Graduate School, which should be submitted to the committee 2 weeks before the exam and (2) a presentation to a public audience that includes the thesis committee. The regulations change from time to time, so a previous dissertation may not be an accurate model. A copy of the thesis should be prepared for each member of the dissertation committee in addition to the copies required by the Graduate School.

4.5—Format of the exam: There are six stages of the exam:

1. Introduction of the student by thesis advisor < 5 min
2. Thesis Presentation. This part of the exam lasts for about 1 h.
3. Public Question and Answer Session. After the presentation, the committee chair will open the floor for questions from the audience.
4. Closed session with the committee. After the public question/answer session, the committee chair will excuse the audience, and the dissertation committee will meet with the student.
5. Post-defense discussion and decision (Committee without the student) [~1-10 min]
6. Outcome discussion and Feedback (Committee with the Student)

Sections 1-3 are open to the public. Section 4 is open to the committee and interested members of the graduate faculty. When the student's performance is evaluated, only the committee members may vote.

4.6—Evaluation: The committee will assess the student based on five criteria outlined in 4.1.

4.7—Possible outcomes for oral defense: There are four possible outcomes (1) Pass, (2) Conditional Pass, (3) Deferred Decision, and (4) Fail. If the outcome is not a full Pass, then the committee will recommend the next steps to the GPD. The result of this examination

should be reported in a timely fashion to the Graduate Program Director, who will then notify the Graduate School.

4.8—Possible outcomes of thesis evaluation: The committee can accept the thesis document or can recommend changes that need to be made to the document. These can be formatting changes to meet the Graduate School requirements or content changes to meet the standards of the scientific community.

4.9—Submission of thesis: Once the thesis is ready for acceptance, the committee members should sign the signature page of the thesis using black ink or electronically. The signature page should be printed on acid-free paper and should conform to the format and wording requirements of graduate school. The students should follow the guidelines posted by the graduate school for submission.

B. Degree Requirements for a non-thesis MS terminal degree

Under exceptional circumstances, a student may petition to be permitted to submit for a terminal non-thesis (coursework) Master's degree.

1. Complete the following graduate credit requirements

- a) 30 Credits (minimum) with an overall GPA of at least 3.0
- b) At least half of those credits, e.g., 15 of 30, must be letter-graded (not "SAT").
- c) No grade lower than "C".
- d) 12 credits or more at the 600-800 level. Chem 699 will not count for a Master's non-thesis degree.
- e) 21 credits or more in the major field (Chemistry) including:
- f) Core Course (both semesters), CHEM 892 every semester, and any divisional coursework or electives recommended by the advisor

C. Degree Requirements for a non-thesis MS degree en route to Ph.D

1. Complete the following graduate credit requirements

- a) 30 Credits (minimum) with an overall GPA of at least 3.0
- b) At least half of those credits, e.g., 15 of 30, must be letter-graded (not "SAT").
- c) No grade lower than "C".
- g) 12 credits or more at the 600-800 level. Chem 699 will not count for a Master's non-thesis degree.
- d) 21 credits or more in the major field (Chemistry) including:
- e) Core Course (both semesters), CHEM 892 every semester, and any divisional coursework or electives recommended by the advisor

2. Successfully complete prospectus defense and original research proposal defense.

III. Summary of Requirements and Exceptions

1. Summary Requirements

A. Doctor of Philosophy

1. Complete the graduate credit requirements.
2. Have a research advisor by the end of the student's second semester in the program and thereafter.
3. Form a Dissertation Committee.
4. Advancement to Candidacy Stage 1: Successfully defend Prospectus.
5. Advancement to Candidacy Stage 2: Successfully defend Original Research Proposal (ORP).
6. Maintain Satisfactory Progress.
7. Successful Data Defense.
8. Successful Defense of Thesis.

B. Degree Requirements for M.S. with thesis

1. Complete the graduate credit requirements.
2. Form a Master's thesis committee.
3. Successful defense of thesis outline (Prospectus).
4. Successful Defense of Thesis.

C. Degree Requirements for a non-thesis M.S. terminal degree

1. Complete the graduate credit requirements.

D. Degree Requirements for a non-thesis M.S. degree en route to Ph.D

1. Complete the graduate credit requirements.
2. Successfully complete Prospectus defense and Original Research Proposal defense.

2. Exceptions to Requirements

When there is a good cause, the Graduate Program Director will consider requests for exceptions to the regulations described in this document. Such requests must be made in writing and, where relevant, accompanied by a supporting memo from the student's advisor.

IV. Recommended Course Sequence for Ph.D.

First Year

Fall (Semester 1)

1. Core Course (Part 1)
2. Graduate Course 1
3. Graduate Course 2
4. Chem 891F-Faculty Research Seminar
5. Research Group Rotation
6. Advisor Selection Process

Spring (Semester 2)

1. Graduate Course 1
2. Graduate Course 2
3. Graduate Course 3
4. Chem 891F-Chemistry Seminar
5. Start Research (Chem 899)

(Graduate Courses 1+ 2+ 3 should be at least 7 Credits)

Summer

Research (Chem 899)

Second Year

Fall (Semester 3)

1. Research in Full Swing
2. Selection of Dissertation Committee
3. Core Course (Part 2)
4. Optional Courses
5. *Individual Development Plan (IDP)**

Spring (Semester 4)

1. Research in Full Swing
2. Optional Courses
3. Write Prospectus
4. *Defend Prospectus (Candidacy Part I)*

Summer

1. Research in full swing
2. Original Research Proposal Prep
3. Start submitting Annual Progress Reports and IDP*

Third Year

Fall (Semester 5)

1. Research in Full Swing
2. ORP Quad Chart
3. Write ORP full proposal
4. Defend ORP (Candidacy Part 2)

*Starting in their second year, students will submit an Annual Student Report by June 30th. The committee should provide written feedback by Aug 31st. Starting in their second year, students will also submit an individual development plan for discussion and approval to their mentor(s) by June 30th.

Templates for Quad Chart, Prospectus, and ORP

<https://umass.sharepoint.com/sites/2020ChemistryGraduateStudents/Shared%20Documents/General/PH.D.%20Degree%20Requirements>

<https://umass.sharepoint.com/:f/s/2020ChemistryGraduateStudents/EqtTIkfT5ChPrei9Abx5gg0BOMemNXtF9jNds4GUm-3jCA?e=qgg9Uj>

V. General Logic/Guidelines for Registration Summer or Academic semesters

The first two semesters are scaffolded, and students will be advised on what courses to take. In this section we provide guidelines for registration for academic and summer semesters beyond your first year. You can find the details on the Graduate School's website at URL: <https://www.umass.edu/graduate/policies/registration>

1. Fall/Spring Semesters: The Graduate School requires that students be enrolled at UMass Amherst every academic semester (Spring/Fall) until they graduate (see Continuous Enrollment/Program Fee on Graduate School's website). Chemistry students meet this requirement by registering for courses. After the second/third semester, Chemistry students register for 892 (Research Group Seminar, 1 credit), and/or Chem 899 (1-9 credits). Second-year students will register for Core 2 in the Fall of their third semester + 892 + 899.

How Many Credits of 899/semester? Doctoral students require a minimum of 18 credits (cumulative) of 899 to graduate. There is no upper limit on the total number of credits for Chem 899 over a student's graduate career. However, a student cannot take more than 9 credits of 899 per semester. Students decide the number of 899 credits based on other courses that they are taking during that semester and the mandatory fee bracket. In Chemistry, **students have to take Chem 892 every semester.** The mandatory fees fall into three brackets: >9 credits, 5-8 credits, and 1-4 credits. A sample fee table is given below.

Fee Schedule (based on Fall 2022 – Spring 2023 rates, subject to change)

Category	1-4 Credits	5-8 credits	> 9 credits
Tuition	Waived for GEO	Waived for GEO	Waived for GEO
Service Fee	\$254.00	\$444.50	\$635.00
Graduate Senate Tax	\$77.75	\$77.75	\$77.75
Mandatory Student Health Fee	*	\$417.50	\$417.50
Graduate Entering Fee (only for first semester at UMass)	\$507.00	\$507.00	\$507.00
Total	\$838.75	\$1,446.75	\$1,637.25
GEO eligible reduction for Mandatory Student Health Fee		\$396.63	\$396.63
Total Mandatory Fees	\$838.75	\$1,446.75	\$1,637.25
Student Health Benefit Plan/SHBP	**	\$1,920.00	\$1,920.00
GEO eligible reduction for SHBP		\$1,824.00	\$1,824.00
Total SHBP	\$79.87	\$79.87	\$79.87
Approx Total Mandatory Fees + SHBP First Semester	\$937.09	\$1,127.59	\$1,318.09
Approx. Total Mandatory Fees + SHBP Subsequent Semesters	\$430.09	\$620.59	\$811.09

Graduate Program in Chemistry
Policies and Regulations
Summary of Requirements and Exceptions

Chem 892: In Chemistry, students have to take Chem 892 every semester. This course is for group meetings. For a student to be considered in good academic standing, a student should receive an 'SAT' grade for Chem 892 at the end of every semester.

Leave of Absence: If a student has to take a leave of absence or will not get paid/working, then the student should enroll in GradSch 999 course and pay a program fee of \$275.00 + Graduate Senate Tax. Before a student takes a leave of absence, the student should consult with the research advisor and the GPD about the duration of the absence and a course of action after the absence period. If a student does not enroll in GradSch999 (Continuous enrollment) during the academic semester (fall/spring), then the student is assumed to have left the graduate program. Re-enrollment will be at the discretion of the GPD and research advisor and will be subject to Graduate School rules for re-enrollment.

2.Summer: According to the Graduate School, "Graduate students are not required to enroll in summer/winter session unless it is needed for financial aid or a stipend."

So, this is not an issue if a student is not getting paid during the summer. All of the chemistry students are financially supported during the summer. Students have to pay FICA, which is 1.45% (or whatever the current amount) of gross pay and OBRA, which is ~7.5% of your gross pay. Federal Insurance Contribution Act (FICA) is a mandatory Social Security and Medicare contribution paid by everyone receiving a paycheck in Massachusetts and Omnibus Budget Reconciliation Act (OBRA) is an employee-funded compulsory retirement contribution plan for all part-time, seasonal and temporary employees in Massachusetts. FICA and OBRA will be deducted from students' paychecks unless they qualify for an exemption.

Students are exempted from FICA and OBRA if they are a full-time or half-time student. For Chemistry to certify that a student is full-time or half-time, students have to register for at least 1 credit of 899 or some other course (if student is doing CPT, that is a different category). For students with GEO benefits, the tuition is waived for 899 irrespective of the credits except for the ~\$60 registration fees. So, by registering for 899 (via University without Walls) for 1-9 credit and paying the registration fee (~\$60), students qualify for an exemption from FICA/OBRA.

For All Students: If students take a course other than 899 (or 699), then the student has to pay per credit. So, if you have to take 696 for 1 credit, then you pay the fees for 1 credit + Registration Fee