



GRADUATE STUDENT HANDBOOK

Department of
Chemistry

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I. OVERVIEW OF THE GRADUATE PROGRAM

The graduate program in the Department of Chemistry at Georgia State University is designed to provide students with the scientific, technical, and professional training to solve today's most challenging problems and pursue rewarding careers in industry, government, or academia, and beyond.

Two types of graduate programs are offered. The M.S. programs are designed to provide students with a strong foundation for advanced academic programs and various scientific, industry, and teaching careers. A significant goal of the M.S. program in chemistry is to engage students in coursework and research at the interface of chemistry and biology and develop their technical, communication, and critical thinking skills. Students in the M.S. program have the option to complete a coursework-based (non-thesis) or research-based (thesis) MS. A third option for students who desire to teach high school chemistry is the MS in Chemical Education with a teaching certificate.

The Ph.D. programs further expand this research training through participation in cutting-edge and interdisciplinary chemical research. The programs are designed to provide graduates with the ability to approach fundamental scientific questions from a biological and chemical perspective.

The purpose of this handbook is to provide students with resources for planning toward a graduate degree. Graduate students are encouraged to consult this document often for program information. However, it is not an all-inclusive document; proactive students should consult additional sources of information such as the [Graduate Catalog](#), the [College of Arts and Sciences Graduate Services](#), and the [Graduate School](#).

Questions about academic issues should be directed to the Director of Graduate Studies, Dr. Suazette Mooring, or the Associate Director of Graduate Studies, Dr. Samer Gozem.

Please note that this is a living document that may be frequently updated.

Director of Graduate Studies:
Suazette Mooring, Ph.D.
smooring@gsu.edu
404-413-5527

Associate Director of Graduate Studies
Samer Gozem, Ph.D.
sgozem@gsu.edu
404-413-5569

2. GENERAL GRADUATE PROGRAM POLICIES

2.1 Registration Requirements

Students are required to be full-time to receive a tuition waiver.

Full-time graduate students must register for 12 or more credits in Fall and Spring semesters, or 9 or more credits in Summer.

Ph.D. and MS Thesis students are required to register for the 3-week Maymester and the 7-week summer semester. The total combined credits for Maymester and the 7-week summer semester should be 9 credits or more. Summer registration for MS non-thesis students is optional.

2.2 GPA and Grade Requirements

Graduate students are expected to maintain a GPA of at least 3.0. Students below that average will have to increase their GPA by the next semester enrolled. If the GPA does not improve after a semester, the student will not receive a graduate assistantship or may be dismissed from the program. Courses with grades lower than a B, do not count toward the degree.

Satisfactory and Unsatisfactory Grades: Certain research-related courses are graded as satisfactory (S) or unsatisfactory (U). Although these grades are not included in the student's GPA, an unsatisfactory grade represents a lack of sufficient progress in the program. Students who are not making sufficient progress toward the degree will not receive a graduate assistantship or may be dismissed from the program.

2.3 Transfer Credit

Students with graduate course credit can request transfer credit. The details for this request can be found [here](#). The request will be reviewed by the Director of Graduate Studies for approval on a case-by-case basis.

2.4 Lab Rotations

Ph.D. and Thesis MS Graduate students fully supported by the department are required to participate in three (3) lab rotations during their first semester enrolled. Rotations are meant to facilitate an introduction to a few groups in the Department and help students choose a research group.

Before starting the rotations, the student will complete the **initial lab rotation request form**. On this form, you will rank-order four faculty with whom you would like to rotate. The

forms are due to the Director of Graduate Studies (DGS) no later than the first Friday in September.

The DGS will then assign the first rotations based on the student's preferences and lab availability. The second and third rotation assignments will be made accordingly one week before they are to start.

Rotations will be 4 weeks in length, during which time you will be provided a space in the host lab. You are expected to:

- Schedule meetings with the PI/research advisor to discuss research projects, expectations, mentoring style, etc.
- Read recent papers from the research group (before meeting with the PI).
- Take the initiative to meet with lab members.
- Attend group meetings.
- Get a feel for the group dynamics.

Additional expectations, including specific hours, if any, should be discussed with the PI. You will be allowed and encouraged to attend other labs' group meetings and to meet with other faculty and students during any rotation.

At the end of each rotation, you will complete a form to provide feedback on the rotation. The PI will also complete a form to provide feedback on the student's rotation. You are required to complete three rotations in good standing. Students will submit their advisor selection form at the end of the third rotation (due on or before the second Monday in January)

Once a student has selected an advisor and the advisor agrees, the student should complete the [Advisor Designation Form](#).

2.5 Types of Assistantships

These descriptions are taken directly from GSU Graduate School, linked [here](#).

Graduate Teaching Assistant, Level A (GTAA)

Graduate students holding GTAA appointments may not have primary responsibility for a course but may serve as discussion leaders in breakout sections, grade papers, or assist the primary instructor of a course in other ways. GTAAs may also engage in a range of other instructional activities that are not tied to a specific course (e.g. proctoring for multiple courses, tutoring, advising). The Dean, Department Chair, or Division Director shall determine that the credentials of a student qualify the individual to undertake the work assignment.

Graduate Teaching Assistant, Level B (GTAB)

Students appointed as a GTA Level B must have a baccalaureate degree and be enrolled in a graduate program and will have completed more than 18 hours of graduate course credit in the appropriate discipline. GTABs require approval by the university provost and chief academic officer, as the university president's designee, prior to assignment as the instructor of record for a course. The dean, department chair or division director shall determine that the

credentials of a student qualify the individual to undertake the work assignment. GTABs must be under the general supervision of regular faculty members, and there must be a mentoring process in the department or division to assist them in their teaching activities. Non-native speakers of English appointed as GTABs must demonstrate English language proficiency.

Graduate Research Assistant (GRA)

Graduate research assistants are graduate students conducting academically significant research under the direction of a faculty member, who may be a regular teaching faculty member or a principal investigator on an external grant or contract. Any student accepted into a graduate degree program may be appointed, depending on credentials, such as (1) admission test scores, (2) grade point averages in previous course work or in the degree program, (3) previous experience, and (4) the nature of the work for which the assistantship is funded.

Graduate Administrative Assistant (GAA)

Graduate administrative assistants are graduate students who provide academic and program support. GAA responsibilities are administrative in nature and consist of duties unrelated directly to teaching or research. Any student accepted into a graduate degree program may be appointed as a GAA.

2.6 Outside Employment Policy

Graduate students in Chemistry typically hold 50%-time appointments as teaching or research assistants and they are expected to pursue coursework or research activity for the remainder of their time. Outside employment, except for a few hours of tutoring or other professional activity is prohibited.

2.7 Diagnostic Exams

Incoming Ph.D. students will take a diagnostic exam before the beginning of their first semester. The results of the diagnostic exam will be used to determine course placement and help students choose appropriate courses to build content knowledge, as needed. The diagnostic exam will be administered in the student's chosen area of study – Analytical, Biochemistry, Biophysical, or Organic Chemistry. The exam is a multiple-choice, American Chemical Society Examination.

2.8 Academic Integrity

Academic integrity is the responsibility of all members of the academic community. Issues related to academic honesty include plagiarism, cheating on examinations, unauthorized collaborations, and multiple submissions of the same work.

Further details on these issues and resolving matters of academic integrity can be found in Georgia State University's policy on academic honesty, linked [here](https://deanofstudents.gsu.edu/document/policy-on-academic-honesty/?wpdmdl=4950/).
<https://deanofstudents.gsu.edu/document/policy-on-academic-honesty/?wpdmdl=4950/>

2.9 Graduate Student Leave Policy

Graduate students are supported with an annual stipend from the Department of Chemistry, which has work obligations similar to other employees at Georgia State University. Therefore, it is necessary to officially inform both your advisor and the chemistry department graduate office when you intend to be away. The department must be aware of your absence in case of an emergency and to ensure that any arrangements for TA substitutions have been made.

Breaks at some point during the year may be necessary. Any leave requests must be in consultation with the research advisor and approved by the Department of Chemistry. Students should discuss with the research advisor how leave is handled in their research group. Extended leave without approval will result in stipend termination.

Students must submit the “**Leave Request Form for Funded Graduate Students**” to the primary research advisor and the Director of Graduate Studies for leave approval.

Students who are traveling to attend a conference or other professional development should instead use the official [Travel Authorization Form for Students](#).

3. DOCTORAL PROGRAM DEGREE REQUIREMENTS AND POLICIES

The program awards a Ph.D. in Chemistry with areas of specialization in the following disciplines:

- Analytical Chemistry
- Biochemistry
- Biophysical Chemistry/Computational Chemistry
- Chemistry Education
- Organic Chemistry/Medicinal Chemistry

A Ph.D. in Chemistry with a concentration in Geochemistry or Nutrition is also available in collaboration with the Departments of [Geosciences](#) and [Nutrition](#), respectively.

Students should select a core discipline for their primary area of specialization that best represents their research interests.

Students with a core discipline in Chemistry Education should choose a cognate discipline in a traditional chemistry area.

Each discipline has a faculty member assigned as the area advisor:

Analytical: Dr. Gangli Wang

Biophysical: Dr. Ivaylo Ivanov

Biochemistry: Dr. Kathy Grant

Chemistry Education: Dr. Suzette Mooring

Organic/Medicinal: Dr. Jun Yin

The Doctor of Philosophy (Ph.D.) is the highest-earned degree offered by the University and is conferred upon the candidate only for distinctive work and original scholarship. The completion of the specified coursework and milestones is essential, but the degree can only be given when the student has presented a dissertation judged to be a significant contribution to the advancement of science.

3.1 Coursework Requirements

A minimum of 80 semester hours of graduate credit is required for the Ph.D. degree as follows:

a. A minimum of 30 credit hours of graduate coursework within the core curriculum. Please note courses numbered 7000-7999 in chemistry and courses numbered 6900 and 7000-7999 in biology are not applicable to the degree.

b. A minimum of 50 semester hours of research of which at least 20 semester hours must be Dissertation Research (Chem 9999).

Credit will be given only for those chemistry courses in which the student receives a grade of B or better.

Students should consult [the coursework and milestone guides](#) and the [graduate catalog](#) for detailed information on course requirements.

3.2 Teaching Requirement

The number of TA assignments will depend on each student's assistantship (GTAA, GTAB, GRA, or GAA). However, all graduate students must complete at least one assignment as Graduate Teaching Assistants (GTA's) each semester until completing the qualifying exam. The Teaching Assistant training course (CHEM 8960) is required and must be taken during the first semester offered.

3.3 Research Skill Milestone Requirement

Proficiency in an approved research skill is required. Suggestions to fulfill these requirements are provided in Appendix B and in the [approved Ph.D. course list]. Students entering the program with an M.S. degree in Chemistry, or a closely related discipline have satisfied this requirement. Note: credit hours used to fulfill the Research Skill milestone do not count towards the degree.

3.4 The Qualifying Examination

Students must pass a Qualifying (Comprehensive) Examination consisting of written and oral portions. The written examinations are typically offered twice a year, during the fall and spring semesters. The written portion of the exam must be completed by one year after admission

into the program. The exact date will be set by the Director of Graduate Studies but is usually close to August 15th (Fall admits) or January 15 (Spring admits). A student who fails the written portion of the exam may repeat the exam at the next offering. If a student misses the deadline for the first attempt at the exam, that exam will be the same as a failed exam and only one more attempt will be allowed. A student who fails the examination a second time will be terminated from the program.

The Oral Examination Committee will consist of a minimum of three members from the research faculty, with at least one member should be from an area different from the major. The student's Research Advisor is excluded from membership on the Oral Examination Committee. The members of the Oral Exam Committee are selected by the Area Advisor, Graduate Director, and Department Chair. A student may repeat the Oral portion of the Qualifying Examination with a newly constituted committee within 3 months of the previous exam. A student who fails the Examination a second time will be terminated from the program.

Details of the Written and Oral Exams are provided in Appendix A.

Timelines and deadlines for taking the written and oral portions of the qualifying examination are provided in the [coursework and milestone guides](#). These deadlines should be strictly adhered to.

3.5 Submission of Dissertation Proposal and Progress Report

Students must submit a dissertation proposal to be approved by the Research Advisor and Graduate Director before the oral portion of the general exam. Once the dissertation proposal is approved, the oral exam committee will be assigned. The dissertation proposal should follow the format of a major funding agency in the discipline of study chosen by the student (NSF, NIH, DOD, etc.) – See Appendix C for detail

In addition to the dissertation proposal, the student should also include a report that discusses their research progress and preliminary results up to that point. Copies of the student's peer-reviewed publications should be provided in an appendix. The completion of the dissertation proposal milestone should be submitted using the appropriate form [here](#).

3.6 Admission to Candidacy

To be admitted to candidacy, the student must have met the research skill requirement, completed core coursework in their discipline, passed the Qualifying Examination (written and oral components), and submitted an approved dissertation proposal.

3.7 Annual Dissertation Committee Meetings and Progress Report

3.7.1 Annual Committee Meetings

Students are required to schedule meetings with their Dissertation Committee at least once a year after reaching candidacy. It is expected that students will have at least two annual meetings before the final dissertation defense. These meetings are required milestones to show sufficient and continued progress toward the degree. Students should complete this [form](#) and send it to each of the committee members prior to the annual meeting.

The oral presentation to the Committee should include:

- * A brief introduction to the dissertation topic
- * A statement of the specific aims and hypotheses
- * An overview of the current achievements
- * Expected future work.

The student is solely responsible for scheduling this meeting each year. This meeting should be scheduled with sufficient notice to committee members. The timeline for completing the annual meeting is provided in the [coursework and milestone guides](#).

3.7.2 Annual Progress Report

As a component of the annual dissertation committee meeting, students should complete a written progress report (2-3 pages) that summarizes their achievements and progress made towards the completion of research goals. The progress report should also offer a brief overview of future work. Copies of peer-reviewed publications that resulted from the dissertation work should be provided in an appendix. The progress report completion is a required milestone to maintain progress toward the degree. Failure to complete the annual dissertation committee meeting and the progress report indicates insufficient progress toward the degree and will result in a reduction in the student's stipend. This milestone completion should be submitted using the appropriate form [here](#).

3.7.3 Dissertation Committee

A Dissertation Committee, which is typically chaired by the dissertation advisor (a member of the department's graduate faculty), must consist of three to five graduate faculty members. The committee should be nominated by the student immediately after completion of the General Qualifying Exam, appointed by the Department Chair in consultation with the Graduate Director, and approved by the College.

3.7.4 Written Dissertation

A written dissertation is required of all candidates for the doctoral degree. Information about the College requirements/guidelines for the dissertation can be found [here](#). The dissertation

must be submitted to the dissertation committee 2 weeks before the scheduled defense. The dissertation committee will decide the acceptability of the written dissertation along with the Director of Graduate Studies and the Department Chair.

3.7.5 Oral Dissertation Defense

The student must also complete an oral defense of their dissertation. The defense date should be scheduled with the dissertation committee at least 4 weeks in advance. The student is required to deliver an oral summary of the dissertation research at an open meeting and to answer subsequent questions from the audience. This is followed by a closed session where the student answers questions from the dissertation committee.

3.8 Timeline to Ph.D. Completion

For students entering the Ph.D. program with a B.S. in chemistry, or with a master's in an unrelated field, the following represents an idealized timeline for completing the PhD:

<u>Year 1, Fall</u>	<u>Year 1, Spring</u>	<u>Year 1, Summer</u>
Chem 8960 (2 credits) Chem 6890 (2 credits) Research skill (2-3 credits, if needed) Core course (3-5 credits) Chem 8800 (1 credit) Chem 8910 (3 credits)	Core courses (6 credits) Chem 8800 (1 credit) Chem 8910 (5 credits or more) Practice written exam in April	Core course (0-3 credits, optional) Chem 8910 (3 credits in Maymester) Chem 8910 (3 or more credits in summer) Complete written qualifying exam in August
<u>Year 2, Fall</u>	<u>Year 2, Spring</u>	<u>Year 2, Summer</u>
Core or Elective courses (3 credits) Chem 8800 (1 credit) Chem 8900 (3 credits) Chem 8910 (5 credits or more) Progress report and dissertation proposal by December	Elective courses (0-6 credits, as needed) Chem 8800 (1 credit) Chem 8900 (3 credits) Chem 8910 (2 credits or more) Oral qualifying exam by mid-Feb. Form dissertation committee by April.	Elective course (0-3 credits, optional) Chem 9999 (3 credits in Maymester) Chem 9999 (6 or more credits in summer)
<u>Year 3, Fall</u>	<u>Year 3, Spring</u>	<u>Year 3, Summer</u>
Chem 9999 (12 credits or more) Hold meeting with dissertation committee and submit annual report by April.	Chem 9999 (12 credits or more) Hold meeting with dissertation committee and submit annual report by April.	Chem 9999 (3 credits in Maymester) Chem 9999 (6 or more credits in summer)
<u>Years 4 and beyond, Fall</u>	<u>Years 4 and beyond, Spring</u>	<u>Years 4 and beyond, Summer</u>
Chem 9999 (12 credits or more) Hold meeting with dissertation committee and submit annual report by April.	Chem 9999 (12 credits or more) Hold meeting with dissertation committee and submit annual report by April.	Chem 9999 (3 credits in Maymester) Chem 9999 (6 or more credits in summer)

Ph.D. students are expected to complete the degree within 5 years. Students who have not yet defended their Ph.D. dissertation at the end of their fifth year may petition for an extension. The petition should be submitted via email to the Director of Graduate Studies. An extension will be granted if the student shows evidence of significant progress toward completion and demonstrates a well-thought-out plan for completing the degree.

4. MASTER'S PROGRAM DEGREE REQUIREMENTS AND POLICIES

The Department of Chemistry has three options for a Master's degree – a research-based (thesis) option, a course-based (non-thesis) option, and an MS in Chemistry Education with a teaching certification.

MS students are expected to complete the degree within 2 years. Students who have not completed their degree by the end of their second year may petition for an extension. The petition should be submitted via email to the Director of Graduate Studies. A one-year extension will be granted if the student shows evidence of significant progress toward completion and demonstrates a well-thought-out plan for completing the degree.

4.1 *Research-based (Thesis) Option Requirements*

4.1.1 *Coursework Requirements*

A minimum of 32 semester hours of graduate credit is required which includes:

- 2 hours of CHEM 8800 (Seminar)
- Pass three of the five areas listed below, by receiving at least a “B” in the specified courses:
 - Biochemistry area course (CHEM 6600 or area substitute)
 - Organic area course (CHEM 6400 or area substitute)
 - Analytical area courses (CHEM 6000 or area substitute)
 - Inorganic area course (CHEM 6210 or area substitute)
 - Biophysical area course (CHEM 6110 or area substitute)
- 12 credits of interdisciplinary electives or CHEM 8910 as approved by thesis research advisor or DGS.
- Directed Research will include:
 - 3 hours of CHEM 8910
 - 6 hours of CHEM 8999 (Thesis Research) taken in the last semester.
- Require courses that do not count toward course credits:
 - Completion of a Research Skill (see approved list in Appendix B)
 - CHEM 8960 (Laboratory Supervision)
 - CHEM 6890, Responsible Conduct of Research

4.1.2 *Thesis Committee*

A Thesis Committee, which is typically chaired by the thesis advisor (a member of the department's graduate faculty), must consist of three graduate faculty members. The committee should be nominated by the student, appointed by the Department Chair in consultation with the Graduate Director and approved by the College. The thesis committee will decide the acceptability of the written dissertation and participate in the oral defense (see below).

4.1.3 Written Thesis

A written thesis is required for the thesis M.S. Information about the College requirements/guidelines for the thesis can be found [here](#). The dissertation must be submitted to the dissertation committee at least two weeks before the scheduled defense.

4.1.4 Oral Thesis Defense

The student must also complete an oral defense of their master's thesis. The defense date should be scheduled with the thesis committee weeks in advance. The student is required to deliver an oral summary of their research project at an open meeting and to answer subsequent questions from the audience. This is followed by a closed session where the student answers questions from the thesis committee.

A detailed course plan for MS in Chemistry (thesis) is provided [here](#),

4.1.5 Timeline to Completion of Research-Based MS Degree

Below is an example of a typical pathway for completing the research-based MS degree in two years, starting in Fall semester.

It is not mandatory to follow this path, this just serves as an example.

<u>Year 1, Fall</u>	<u>Year 1, Spring</u>	<u>Year 1, Summer</u>
Chem 8960 (2 credits) Chem 6890 (2 credits) Research skill (2-3 credits) Chem 8910 (3 credits)* Core course (3 credits)* Chem 8800 (1 credit)*	Core courses (6-8 credits)* Chem 8800 (1 credit)* Chem 8910 (3-6 credits)* Choose Thesis advisor	Interdisciplinary elective (optional, 3 credits)* Chem 8910 (6-9 credits)* Form Thesis Committee
<u>Year 2, Fall</u>	<u>Year 2, Spring</u>	<u>Year 2, Summer semester</u>
Interdisciplinary electives or CHEM 8910 (6 credits)* Chem 8999 (6 Credits).*	Chem 8999 (12 Credits).	Keep taking Chem 8999 credit until you defend the thesis.

* The sum of courses with asterisks should add up to at least 32 credit hours.

4.2 Course-based (Non-Thesis) Option Requirements

4.2.1 Coursework Requirements

A minimum of 32 semester hours of graduate credit is required which includes:

- 2 hours of CHEM 8800 (Seminar),
- Complete the core area requirements with at least a "B" in the specified courses:
 - Biochemistry area course (CHEM 6600 or area substitute)
 - Organic area course (CHEM 6400 or area substitute)
 - Analytical area courses (CHEM 6000 or area substitute)
 - Inorganic area course (CHEM 6210 or area substitute)
 - Biophysical area course (CHEM 6110 or area substitute)
- 12 credits of interdisciplinary electives
- Directed Research will include:
 - 3 hours of CHEM 8910 with the Director of Graduate Studies
 - Non-thesis capstone paper - 4 hours of CHEM 8888 (taken over two semesters)
- A minimum of 3 hours of CHEM 8910 (Directed Research) should be completed before the paper is submitted. A maximum of 6 hours of CHEM 8910 can be counted towards the degree.
- Required courses that do not count toward course credits:
 - Completion of a Research Skill (see approved list in Appendix B)
 - CHEM 8960 (Laboratory Supervision)
 - CHEM 6890, Responsible Conduct of Research

A detailed course plan for MS in Chemistry (non-thesis) is provided [here](#).

4.2.2 Non-thesis Paper

A Non-Thesis capstone paper must be submitted and approved by the Research Paper Advisor and the Graduate Director. This capstone paper should be carried out with a Research Paper Advisor. The report may focus on a research project carried out in the advisor's lab or on a literature search.

The Research Paper must have an introduction, a body of data and information, a discussion and conclusion sections, a formal list of references, and conform to ACS style. A final copy of the research paper must be submitted to the Graduate Director with a title page indicating (by signature) the research advisor's approval. The paper, with the title page, must be submitted to the Graduate Director no later than five working days before the last day of classes for the semester in which the student plans to graduate. If the paper is approved by the Graduate Director and subsequently the Department, the student should submit the required milestone form [here](#).

4.2.3 Timeline to Completion of Course-Based (Non-Thesis) MS Degree

Below is an example of a typical pathway for completing the course-based MS degree in two years, starting in Fall semester.

It is not mandatory to follow this path, this just serves as an example.

<u>Year 1, Fall</u>	<u>Year 1, Spring</u>	<u>Year 1, Summer (optional)</u>
Chem 8960 (2 credits) Chem 6890 (2 credits) Research skill (2-3 credits) Chem 8910 (3 credits) Core or Interdisciplinary elective (3 credits) Chem 8800 (1 credit)	Core or Interdisciplinary electives (8-9 credits) Chem 8800 (1 credit) Chem 8961 (3 credits)	If you take classes in the summer: Core or Interdisciplinary elective (3 credits) Chem 8961 (6 credits)
<u>Year 2, Fall</u>	<u>Year 2, Spring</u>	<u>Year 2, Summer semester (if needed)</u>
Core or Interdisciplinary electives (8-9 credits) Chem 8888 (1-2 Credits).	Core or Interdisciplinary electives (2-8 credits) Chem 8888 (1-2 Credits). Chem 8961 (0-6 credits)	Take courses left to complete the M.S. requirements, if needed.

4.3 MS in Chemical Education with a Teaching Certificate

This program is overseen by the Department of Chemistry the Department of Middle and Secondary Education in the College of Education and Human Development. This degree program is jointly owned by the Departments of Chemistry and Middle and Secondary Education.

Students entering this program must pass the program requirements.

4.4 Program Requirements

1. Pass the GACE II exam in Chemistry Content Area
2. Pass EXC 4020 - Exceptional Children and Instruction
3. Complete 15 hours of specified chemistry coursework
4. Complete 21 hours of pedagogy and education field experiences courses
5. Complete education program exit portfolio
6. Proficiency in a chemistry research skill. Suggestions to fulfill this requirement are provided in Appendix B.

All coursework must be completed with a B or better.

Details of the requirements for this degree can be found in the GSU Graduate Catalog and the detailed course guides can be found [here](#).

5. GRADUATE STUDENT RESOURCES

The following are links to resources that can be helpful to graduate students:

FAQs for Current Chemistry Graduate Students: <https://chemistry.gsu.edu/graduate/faqs-for-current-graduate-students/>

Chemistry graduate student forms and coursework planning guides: <https://chemistry.gsu.edu/graduate-forms/>

The Graduate School: <https://graduate.gsu.edu/>

College of Arts and Science Graduate Services: <https://cas.gsu.edu/graduate-services/>

The Graduate Student Journey: <https://cas.gsu.edu/graduate-student-journey/>

The Graduate Catalog: <https://catalogs.gsu.edu/content.php?catoid=5&navoid=699>

Chemistry Graduate Student Forms: <https://chemistry.gsu.edu/graduate-forms/>

The GSU Library: www.library.gsu.edu/

International Student and Scholar Services: www.gsu.edu/es/international_services.html

Health insurance information: <https://sfs.gsu.edu/resources/student-health-insurance/>

Health Insurance waivers: <https://sfs.gsu.edu/resources/student-health-insurance/waiving-out-of-ship/>

Counseling Center: <https://counselingcenter.gsu.edu/>

Applying to Graduate: <https://registrar.gsu.edu/graduation/>

Thesis and Dissertation formatting: <https://cas.gsu.edu/thesis-dissertation-formatting/>

Continuous Enrollment Policy: <https://cas.gsu.edu/graduate-student-continuous-enrollment-policy/>

APPENDICES

Appendix A: Details of Qualifying (Comprehensive) Exam by Core Area

Overview

All Ph.D. students must pass the qualifying (comprehensive) exam to continue in the program. Two attempts to pass the exam are allowed. Failure to do so results in termination from the program.

Procedure Overview

1. Written portion of the General Exam. Students will receive an email from the Director of Graduate Studies about their upcoming written examination in the semester preceding the exam. The written exams are typically an American Chemical Society Exam. Specific standards must be met to pass the exam. Failure to meet the required standard results in a failure of the exam (see below for area-specific requirements). If a student fails the written exam after the first attempt, no oral portion will be given. The student must take the written exam again the next time it is offered.

2. Oral portion of the General Exam

If a student passes the written portion of the exam, they will proceed to the oral portion. The purpose of the oral portion of the Examination is to determine if a candidate has a sufficient grasp of the background and material needed to complete a Ph.D. dissertation in two to three additional years. Students are expected to:

- Address areas in which they were weak on the written exam.
- Answer questions appropriate to their area of interest
- Discuss their research or proposed research in detail.

Format of the Oral Portion of the General Exam

The candidate will give a brief formal presentation to the General Exam Committee on the general goals and significance of the proposed research project as well as experimental procedures and facilities/equipment needed in the project.

The following are additional requirements for the oral exam:

- All students must be able to discuss details of research.
- Students must be able to address "weak areas" as identified in the written exam.
- Students should be able to answer questions appropriate to areas of interest.
- Discuss recent papers, methods or techniques in the area of interest.
- Demonstrate proficiency in the literature.

If the student passes, then the General (Qualifying) Exam requirement has been met. If the student fails, the student should repeat the exam within 3 months with a newly formed oral exam committee.

The following are details of pass rates of the corresponding ACS Exam based on the Chemistry Area:

Chemistry Area	*Passing Percentile
Analytical	≥ 85th
Biochemistry	≥ 80th
Biophysical	≥ 80th
Organic/Medicinal	≥ 90th

*Results below this percentile will count as a failure of the exam

Appendix B: Courses that Satisfy the Research Skill Requirement

CHEM 6050 – Introduction to Fourier-Transform NMR Spectroscopy. 2 Credits.

CHEM 8970 – Topics in Molecular Biological Sciences. 1-2 Credits.

BIOL 6744 – Biostatistics

CSC 6370 – Web Programming

CSC 6650 – Introduction to Bioinformatics

CSC 6730 – Data Visualization

MATH 6547 – Introduction to Statistical Methods

ENGL 6510 – Grant and Proposal Writing

ENGL 8115 - Technical Writing

Courses outside of these, need to be approved by the Director of Graduate Studies.

Appendix C: Format of Dissertation Proposal

Students may follow the proposal structure of a NIH, NSF, or other grant proposal structure compatible with their research. Examples of an NIH and NSF proposal structure are provided below:

NIH Research Proposal Structure

1. Specific Aims (1-page summary)

Introduction to the topic

What specific questions you plan to answer (2-5 specific questions or goals)

Brief summary of data and type of methods to be used (1-2 sentences)

Why this study is important and/or innovative. What study will contribute. Why the reviewer should care about this topic and study.

2. Background and Significance

Very focused literature review (not a general summary) centered on what we know about the specific research questions, what we don't know, and what you will add to the literature

Clear conceptual framework or theoretical approach (drawn from the literature review) that you will use to guide the analysis

Why this issue is important and what will we learn from the study

3. Progress Report/Previous Studies

Summarize any previous work you have done on this topic

Summarize other previous work you've done that is related to this project

Summarize qualifications of investigators to carry out this study

4. Data and Methods

Very specific, clear and well-organized roadmap or game plan showing how you will conduct the analyses which will answer the 2-5 specific questions in the specific aims

Can be organized around the questions or goals in Specific Aims (To answer this question I will...)

Can be organized around stages of analysis (first I will do this.....next I will do this...)

Use illustrations of how you will conduct analysis

Make sure all salient details of data, sampling, data quality, potential biases and limitations of data are described

Be realistic about the strengths and limitations of the study. Don't oversell or undersell the solutions to problems that have plagued past studies.

Don't ignore methodological or data problems – recognize them and explain how they will be handled

5. Summary

6. References

NSF Research Proposal Structure

A. PROJECT SUMMARY

Include a self-contained description of the activity. Write in the 3rd person and include a statement of objectives and methods to be employed. *Clearly address in separate statements intellectual merit and broader impacts.*

C. PROJECT DESCRIPTION

i. INTRODUCTION

Provide a basic but thorough introduction to the subject. State the overall vision and motivating rationale. What is lacking? Provide background and need/significance. Do you have preliminary results?

ii. PROJECT PLAN

Include Goals, Objectives and Deliverables. Describe the Activities. Provide enough information as to why you and the team are expert enough to accomplish the goal. What facilities and resources are available? How will you address a diversity component? Goal?

Include for each Objective: (1) Methods/Activities (2) Expected Results/Deliverables (3) Limitations & alternatives & (4) Timeline/Resources if needed

iii. MANAGEMENT PLAN – for projects with more than one PI

Detail how the project will be managed. Who is responsible overall for the project and include specific roles and responsibilities information. How will communications be handled? Quarterly meetings? Include activities, persons responsible and timeline.

iv. EVALUATION/ASSESSMENT PLAN

Include details about how the project and objectives will be evaluated and how results will be analyzed

v. DISSEMINATION

How will results be broadly conveyed? Professional conferences, papers, special seminars, etc.

vi. SUMMARY

Summarize project goals and expected outcomes, including how they pertain to broader impacts.

D. REFERENCES CITED (use consistent style – APA, IEEE, Chicago, MLA, etc.)