

Chemistry Graduate Student Handbook
revised August 2017



University of Louisville
Department of Chemistry



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Minimum Admissions Criteria

Students seeking a graduate degree in chemistry should meet these minimum requirements:

1. A B.A. or B.S. degree in chemistry or in a related field. Students should have a chemistry background equivalent to 36 hours of undergraduate coursework. Students with inadequate preparation may be admitted with conditions.
2. A minimum quality point standing of 3.0/4.0.
3. Graduate Record Examination quantitative and verbal scores totaling at least 1000 with an analytical score of 2.5.
4. At least two letters of recommendation. It is recommended that the letters be written by someone who can speak to the applicant's academic and/or professional capabilities.
5. A personal statement addressing specific issues pertaining to knowledge, work and/or research experiences, goals, and/or interests in the chosen field of study.
6. If English is not the student's primary language, a TOEFL score of 80 or higher on the internet based TOEFL, 210 or higher on the computer-based TOEFL, or 547 or higher on the paper based TOEFL is required. Successful completion the Intensive English as a Second Language Program at the University of Louisville may substitute for the TOEFL. Approval from the University of Louisville International Center of financial resources adequate to support educational and living expenses in the United States for the duration of graduate studies is also required. The award of a University Fellowship or Graduate Assistantship is considered evidence of adequate financial resources.

Applications for Fall admission should be submitted before January 15 to receive full consideration for all Fellowship and Graduate Teaching Assistantship (GTA) opportunities. Applications received after this date will not be eligible for fellowships, but will be considered for GTA positions. Applications for Spring admissions should be submitted by September 15. Spring applicants will be considered for a limited number of GTA positions. Students not admitted for Spring may request to have their application consider for Fall.

Admissions decisions will only be made once a complete application has been received. A complete application includes the following items:

1. A completed online application: graduate.louisville.edu/apply
2. Official transcripts showing all degrees awarded and all undergraduate and all graduate work completed at all colleges/universities previously attended. All transcripts that are not in English must be translated verbatim into English and must be notarized. International applicants may be required to have transcripts evaluated by a credential evaluation service such as World Education Services (www.wes.org) or Educational Credential Evaluators (www.ece.org)
3. Official GRE scores
4. A minimum of 2 recommendation letters
5. Personal statement
6. Application fee
7. Official TOEFL scores (international applicants)

Please contact Sherry Nalley to check on the status of your admission application.

Requirements for Doctor of Philosophy in Chemistry

A minimum total 30 semester hours of graduate credit is required. At least 15 semester hours must be in chemistry courses. An overall GPA of 3.0 must be maintained.

Courses: Students must pass a minimum of 6 graduate lecture courses from at least 3 of 6 divisions (Analytical Chemistry, Biochemistry, Inorganic Chemistry, Organic Chemistry, Physical Chemistry, and Physics) with a minimum grade of 'C' in any one course during the first 4 semesters (excluding summers). Up to 2 courses may be waived for students entering with a M.S. degree in chemistry (or a closely related field with consent of the Chemistry Director of Graduate Studies). For each course waived, the student must receive an A- or higher in a graduate chemistry lecture course at the University of Louisville.

Mentor: The research mentor must be selected during the first semester. Students are required to interview a minimum of 3 chemistry faculty (more are recommended) and have them sign the green Mentor Selection Form. The student may choose a mentor after obtaining 3 signatures. If the mentor agrees to accept the student, the mentor will initial the Mentor Selection Form and the student should submit it for final approval by the department Director of Graduate Studies. No mentor selection is final until approval. Students wishing to change research mentors at any time should first consult with the departmental Director of Graduate Studies. Failure to actively participate in a research group is grounds for loss of funding and/or dismissal from the program.

Cumulative Exams: Students must complete a series of written cumulative examinations within their division designed to show broad knowledge in their chosen area. Cumulative exams begin in the second semester and are given the third week of January, February, March, September, October, and November. Each division will write a unique exam each month covering topics from undergraduate course content within that division, graduate level content from the current and prior semester, and content from the current literature and/or departmental seminars. Exams are scored on a scale of 0 - 3 points in half point increments. Students must score 2.0 or higher on at least 4 exams and accumulate 11 points within their research division by the end of the 9th consecutive exam to qualify for the Ph.D. program. An absence from an exam, unless excused by the Director of Graduate Studies, is scored as 0 and constitutes an attempt.

Literature Seminar: Students must enroll in Seminar (CHEM 695) during their first 3 semesters (excluding summer). Students enrolled in CHEM 695 must attend student seminars and other departmental seminars as outlined in the course syllabus. Additionally, the student must present a seminar on recent advances by other research groups in the student's area of study by the end of the third semester. The topic must be approved by the student's research advisor and the seminar coordinator. The student must develop the topic, integrating material from multiple references into a flowing, well-organized presentation of appropriate length. The seminar will be evaluated as pass/fail by a committee comprised of three chemistry graduate faculty and feedback will be provided in a manner determined by the seminar coordinator (e.g. ratings, letter grade, evaluations, comments). The student's advisor may not be part of the grading committee. A student that fails the seminar presentation will be allowed one attempt to repeat the seminar. If the second attempt is not successfully completed prior to the end of the student's 4th semester, the student will be dismissed from the Ph.D. program. Additional information will be provided on the Chem 695 syllabus.

Dissertation Committee: The student will select his/her Dissertation Committee in consultation with the research director during the first 4 semesters of study. The committee consists of the

research mentor, a chemistry faculty in the same division, a chemistry faculty in a different division, and a faculty member from a different department. Students may add an additional chemistry faculty to the committee if they choose to. Students must have each committee sign the Dissertation Committee Form and submit it the chemistry office.

Research Proposal (RP): The research proposal (RP) must be completed by the end of the 5th semester (excluding summers) without exception. If it is not completed within the 5th semester, the student will not be in good standing and may be dismissed from the program. Evaluation of the RP is made by the student's graduate advisory committee (thesis committee), which is chaired by the research advisor. The RP is intended to demonstrate the student's ability to develop, explain, and defend a research idea that the student plans to conduct in the laboratory or on a completely original idea if desired. The proposal should present preliminary results from the student's research and/or from the literature and develop one original hypothesis fully with an explanation of experimental details and expected results. The student should show how the hypothesis will be tested experimentally and provide plans for different outcomes. The student should also communicate the importance of the work and how it will provide new fundamental knowledge to the field, a solution to an important problem, or a potential application. Students are expected to demonstrate their originality, innovation and understanding of the scientific process.

This requirement includes a written research proposal and an oral presentation/examination. The requirements of each are described below.

Written Research Proposal: The written RP is strictly limited to 6 pages (single space, 1 inch margins) including figures, but not including references. Treat the written proposal as if you were actually submitting it as part of a job application or for funding. It should clearly and concisely present your proposed research and why it should be funded. This should include a brief summary and introduction to outline the problem, why it is important, and what progress others in the field have made. It should state a hypothesis that your planned work will test and specific aims of the research. The proposal may provide preliminary data from research or literature and should describe what will be done, why this system was selected, how it will be done, what are the expected results, how success will be determined, and what is the impact if successful. The new proposed work should take up the bulk of the written RP (3-4 pages). The proposal should be well referenced in the style of a major journal in your field. Carefully proofread your proposal and have a trusted friend proofread it as well. Typos, poor grammar, low quality graphics, and "simple mistakes" detract from your scientific argument and make the work appear sloppy, disorganized, and of low quality. The written RP is to be revised at least once by the research advisor before being submitted to the committee at least one week prior to the oral presentation/examination. The committee may return unsatisfactory written proposals to the student and delay the oral examination until at least one week after an acceptable rewrite is received.

Oral Presentation/Examination: Treat the oral presentation/examination as if the written RP was submitted with a job application and you were called for an interview to present it. Do not assume that everyone knows the proposal as well as you, they don't. It is your responsibility to present the proposed work in a clear and fluid to an audience that is not intimately familiar with your proposal. The presentation should be professional. Expect frequent interruptions during your presentation and be prepared to answer questions on your proposal, techniques related to it, and contributions of others in the field. The oral presentation can be given on PowerPoint, but

with no more than 20 slides total (including any supplemental slides). A student failing the oral examination may repeat it only one time, at the discretion of the student's graduate advisory committee.

The MS degree will be awarded upon successful completion of the research proposal.

Research: Progress in research will be evaluated by the research mentor in consultation with the dissertation committee.

Publications: It is normally expected that prior to the Research Seminar, at least one manuscript based on the student's research would have been submitted to a peer-reviewed journal. The student's contribution must be substantial to both the scientific content and the drafting of the manuscript. At least one research article based on the student's dissertation research must either be published or accepted for publication in a peer-reviewed journal before scheduling the Ph.D. dissertation defense. It is highly recommended that the student distribute the published manuscript(s) and any submitted manuscripts to the members of her/his Dissertation Committee.

Research Seminar: A one-hour seminar on the student's dissertation research project is to be given before the end of the 8th semester (excluding summers). This seminar does not require the student to enroll in Chem 695, but the student should contact the CHEM 695 instructor to schedule a time and date and for evaluation criteria. The seminar will be judged as pass/fail.

Dissertation: A written dissertation describing the research program is submitted a minimum of 14 days before the defense. The defense consists of a one-hour seminar followed by an oral examination with the Faculty Reading committee.

Candidacy: A student may enter Master's candidacy after successfully completing all lecture course requirements, the literature seminar, and accumulation of at least 30 credit hours. After admission into candidacy, the student must enroll for candidacy (and only candidacy) every semester (including summers) until graduation. Students may enter Ph.D. candidacy upon completion of the Original Research Proposal and receipt of their M.S. degree. *Students must be enrolled for Ph.D. candidacy a minimum of 9 months prior to graduation.*

Requirements for Master of Science (thesis) in Chemistry

A minimum total 30 semester hours of graduate credit is required. At least 15 semester hours must be in chemistry courses. An overall GPA of 3.0 must be maintained.

Courses: Students must pass a minimum of 4 graduate lecture courses from at least 3 of 6 divisions (Analytical Chemistry, Biochemistry, Inorganic Chemistry, Organic Chemistry, Physical Chemistry, and Physics) with a minimum grade of 'C' in any one course during the first 4 semesters (excluding summers).

Mentor: The research mentor must be selected during the first semester. Students are required to interview a minimum of 3 chemistry faculty (more are recommended) and have them sign the green Mentor Selection Form. The student may choose a mentor after obtaining 3 signatures. If the mentor agrees to accept the student, the mentor will initial the Mentor Selection Form and the student should submit it for final approval by the department Director of Graduate Studies. No mentor selection is final until approval. Students wishing to change research mentors at any time should first consult with the departmental Director of Graduate Studies. Failure to actively participate in a research group is grounds for loss of funding and/or dismissal from the program.

Literature Seminar: Students must enroll in Seminar (CHEM 695) during their first 3 semesters (excluding summer). Students enrolled in CHEM 695 must attend student seminars and other departmental seminars as outlined in the course syllabus. Additionally, the student must present a seminar on recent advances by other research groups in the student's area of study by the end of the third semester. The topic must be approved by the student's research advisor and the seminar coordinator. The student must develop the topic, integrating material from multiple references into a flowing, well-organized presentation of appropriate length. The seminar will be evaluated as pass/fail by a committee comprised of three chemistry graduate faculty and feedback will be provided in a manner determined by the seminar coordinator (e.g. ratings, letter grade, evaluations, comments). The student's advisor may not be part of the grading committee. A student that fails the seminar presentation will be allowed one attempt to repeat the seminar. If the second attempt is not successfully completed prior to the end of the student's 4th semester, the student will be dismissed from the program. Additional information will be provided on the Chem 695 syllabus.

Committee: The student will select his/her Thesis Committee in consultation with the research director during the first 3 semesters of study. The committee consists of the research mentor, a chemistry faculty in the same division, a chemistry faculty in a different division and a faculty member from a different department. Students must have each committee sign the Dissertation Committee Form and submit it the chemistry office.

Research: Progress in research will be evaluated by the research mentor in consultation with the thesis committee.

Publications: It is normally expected that prior to the thesis defense at least one manuscript based on the student's research would have been submitted to a peer-reviewed journal. The student's contribution must be substantial to both the scientific content and the drafting of the manuscript.

Thesis: A written thesis describing the research program is submitted a minimum of 14 days before the defense. The defense consists of a one-hour seminar on the thesis project followed by an oral examination with the Faculty Reading committee.

Candidacy: A student may enter candidacy after successfully completing all lecture course requirements, the literature seminar, and accumulation of at least 30 credit hours. After admission into candidacy, the student must enroll for candidacy (and only candidacy) every semester (including summers) until graduation. Students in candidacy are not permitted to enroll in lecture courses, seminar, or research.

Requirements for Master of Science (non-thesis) in Chemistry

A minimum total 30 semester hours of graduate credit is required. At least 15 semester hours must be in chemistry courses. An overall GPA of 3.0 must be maintained.

Courses: Students must pass at least 6 graduate lecture courses from at least 3 of 6 divisions with a minimum grade of 'C' in any one course. Additional credit hour requirements can be met by research and/or additional graduate level coursework.

Mentor: The research mentor must be selected during the first semester. Students are required to interview a minimum of 3 chemistry faculty (more are recommended) and have them sign the green Mentor Selection Form. The student may choose a mentor after obtaining 3 signatures. If the mentor agrees to accept the student, the mentor will initial the Mentor Selection Form and the student should submit it for final approval by the department Director of Graduate Studies. No mentor selection is final until approval. Students wishing to change research mentors at any time should first consult with the departmental Director of Graduate Studies. Failure to actively participate in a research group is grounds for loss of funding and/or dismissal from the program.

Literature Seminar: Students must enroll in Seminar (CHEM 695) during their first 3 semesters (excluding summer). Students enrolled in CHEM 695 must attend student seminars and other departmental seminars as outlined in the course syllabus. Additionally, the student must present a seminar on recent advances by other research groups in the student's area of study by the end of the third semester. The topic must be approved by the student's research advisor and the seminar coordinator. The student must develop the topic, integrating material from multiple references into a flowing, well-organized presentation of appropriate length. The seminar will be evaluated as pass/fail by a committee comprised of three chemistry graduate faculty and feedback will be provided in a manner determined by the seminar coordinator (e.g. ratings, letter grade, evaluations, comments). The student's advisor may not be part of the grading committee. A student that fails the seminar presentation will be allowed one attempt to repeat the seminar. If the second attempt is not successfully completed prior to the end of the student's 4th semester, the student will be dismissed from the program. Additional information will be provided on the Chem 695 syllabus.

Research Proposal: The research proposal serves as the capstone project for the non-thesis M.S. degree. Students must develop, explain, and defend a research proposal. The proposal can be based on recent literature or the student's research project (if applicable). The student's mentor from the chemistry graduate faculty should oversee the proposal committee. The committee consists of the mentor plus two additional chemistry faculty selected by the student in consultation with the mentor.

Selection of Research Advisor (Mentor)

One of your most important tasks during your first semester is to gather information that will enable you to choose a research adviser. Because a large fraction of your time during the next four to five years will be devoted to research, it is important that you select a research group in which you will be comfortable and a research project that you find interesting and exciting. Our department has many faculty members with a wide variety of research interests so you should have no difficulty in finding several compatible research groups. The research mentor must be selected during the first semester. Students are required to interview a minimum of 3 chemistry faculty (more are recommended). Students need to obtain the signatures of the faculty they interviewed on the green Mentor Selection Form. After the graduate student has interviewed the minimum number of faculty, they can approach the faculty member that is their top choice and request them to be their research advisor. If that faculty member agrees, then that will be indicated on the green form by the faculty with their initials. If the faculty member does not agree, then the student must make the request to their second choice. The process continues until the graduate student finds a faculty member that agrees to serve as the research advisor. At that point the green Mentor Selection Form is turned in to the Director of Graduate Studies for final approval. The graduate student will not be officially placed with a research advisor until final approval from the Director of Graduate Studies. This must be completed by the end of the Fall semester for students admitted in Fall and Spring semester for those admitted in Spring.

Registration Procedures

Registration for all academic units within the University is coordinated by the Registrar's Office, in cooperation with the respective Dean's Offices. A schedule of courses being offered for the upcoming year, along with the academic calendar, can be found at: <http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>

Prior to registration, the student should consult with his/her research mentor or the Director of Graduate Studies. After courses have been selected, the student should register by the procedure outlined in the Schedule of Courses. The office Unit Business Manager can help to alleviate difficulties which arise during registration.

Graduate students must be registered as full-time students to receive stipends or fellowships. Students must register for courses OR be in candidacy to be considered full-time. A minimum of nine credit hours during Fall and Spring semesters and six credit hours in the Summer is required to be considered full-time. All students must register for research as needed to maintain full-time status. NOTE: Chem 691, 692, and 695 DO NOT count towards the course requirements. A maximum of twelve credit hours can be taken in a given semester. Students wishing to take more than the maximum number of hours must obtain permission from the Director of Graduate Studies and the Dean's Office. For students in candidacy, they must register as a candidate every semester (including summers).

Courses

A list of potential courses offered by the Chemistry Department is given below. Please consult online schedule of classes or the chemistry office for a list of actual offerings. For clarity the list is presented according to the Division of Chemistry offering the course. Note that students must take graduate courses from a minimum of 3 divisions. Graduate courses are numbered 550 or greater to count for graduate credit.

Analytical Division

Chem 620	Optical Spectrochemical Methods of Analysis
Chem 621	Electroanalytical Chemistry
Chem 622	Analytical Separations
Chem 623	Advanced Chemical Instrumentation
Chem 625	Advanced Analytical Chemistry
Chem 629	Special Topics in Analytical Chemistry

Biochemistry Division

Chem 645	Modern Biochemistry I
Chem 647	Modern Biochemistry II
Chem 684	Biophysical Chemistry

Inorganic Division

Chem 550	Group Theory and its Chemical Applications
Chem 653	Main Group Chemistry
Chem 654	Advanced Coordination Chemistry
Chem 655	Special Topics in Inorganic Chemistry (Fall Semester)
Chem 656	Special Topics in Inorganic Chemistry (Spring Semester)

Organic Division

Chem 557	Bio-Organic Phenomena
Chem 670	Chemistry of Heterocyclic Compounds and Alkaloids
Chem 675	Special Topics in Organic Chemistry (Fall Semester)
Chem 676	Special Topics in Organic Chemistry (Spring Semester)
Chem 677	Mechanisms and Theory in Organic Chemistry
Chem 678	Advanced Physical Organic Chemistry
Chem 679	Advanced Organic Synthesis Chemistry

Physical Chemistry Division

Chem 561	Advanced Physical Chemistry
Chem 576	Polymer Chemistry (occasionally offered)
Chem 661	Chemical Thermodynamics
Chem 666	Special Topics in Physical Chemistry (pre-requisite: Chem. 561)
Chem 672	Quantum Chemistry (pre-requisite: Chem. 561)
Chem 684	Biophysical Chemistry (pre-requisite: Chem. 561)
Chem 687	Molecular Spectroscopy (pre-requisite: Chem. 561)

Physics

Phys 605	Theoretical Mechanics
Phys 611	Electromagnetic Theory I

The following courses are not offered by a specific division or are common to all divisions. Chem 651 and 652 can count towards the course requirements with approval of the Chemistry Department Director of Graduate Studies.

Chem 632	Chemical Education
Chem 651	Independent Study (Fall semester)
Chem 652	Independent Study (Spring semester)
Chem 688	X-ray Crystallography
Chem 691	Research (Fall semester)
Chem 692	Research (Spring semester)
Chem 695	Seminars

Graduate Student Guidelines

Financial Support

Financial support for full-time graduate students may be in the form of a Graduate Teaching Assistantship (GTA), Graduate Research Assistantship (GRA), or Fellowship. Financial support includes a stipend, health insurance benefits, and tuition remission. All administrative problems with salary or tuition should be reported to the Unit Business Manager in the Chemistry Office. To receive financial support, a student must meet four eligibility requirements. The student must maintain good academic standing, the student must make normal degree progress, the student must satisfactorily complete any GTA obligations, and the student must not exceed the funding time limit.

Good academic standing requires a minimum graduate coursework GPA of 3.0 (excludes research and seminar) as well as a minimum *overall* GPA of 3.0. If a student's GPA falls below 3.0 in either of these categories, the student will be placed on academic probation for the next semester (excluding summers). A student on academic probation must meet with the Director of Graduate Studies and his/her Advisory Committee to discuss a suitable plan for remediation. If the student's coursework and overall GPAs improve to 3.0 or higher by the end of the probationary semester, the probation will be lifted. If the student fails to attain coursework and overall GPAs of 3.0 or higher by the end of the probationary semester, the student will be dismissed from the program.

Normal degree progress is defined by active participation in a research group and satisfactory completion of the following milestones according to the timelines established in this handbook: coursework, literature seminar, cumulative exams, research proposal, research seminar.

Students with GTA obligations must adhere to the following guidelines and responsibilities:

1. All GTAs are required to be present and available in the department one full week before the first day of classes in order to receive and respond to messages, attend meetings, and to execute other duties associated with their assignments. Messages and information to GTAs may be emailed or placed in departmental mailboxes. E-mail contact only does not fulfill the requirement for presence and availability. A GTA may check with their assigned Senior Instructor in advance for their duties. However, reassignments are possible and GTAs must be able to respond on short notice. Failure to meet these obligations constitutes unsatisfactory completion of GTA obligations.
2. Each GTA must present and fully prepared for each assigned laboratory or recitation sections. For laboratory assistants, preparation includes having chemicals and instrumentation ready for each experiment at the beginning of the period. For recitation instructors, preparation includes reading assigned chapters and working

through all assigned problems, quizzes and exams. Each section must start and end on time including time for laboratory clean-up. If the assistant is unable to meet a section for any reason, it is his/her responsibility to inform the Senior Instructor of the course so that a replacement can be found to meet the section. If the Senior Instructor cannot be reached, the name of a replacement must be left with a staff member in the chemistry office (852-6798).

3. Each GTA must provide a complete schedule to the Senior Instructor of the course to facilitate setting of office hours and proctor/grader assignments. In some cases, the GTA may be required to attend class lectures. Any changes in schedule must be promptly reported to the Senior Instructor.
4. Each full-time GTA must set aside two office hours per week to answer course-related questions from any student enrolled in the course. The time and place where office hours will be held must be promptly announced at the beginning of the semester.
5. Course-specific guidelines concerning grading and policies will be issued by the Senior Instructor and must be followed. All grading must be completed according to the procedures and schedules established. No alterations or deletions are to be made without the consent of the Senior Instructor.
6. In cases where grades are to be recommended by the GTA, the grading methods will be established by the Senior Instructor. The grading criteria must be conveyed by the GTA to the students at the beginning of the semester. Grades and related materials are private and confidential. Graded materials cannot be left out for public inspection, and the GTA must not reveal the grades of one student to another.
7. Each GTA must be read and act in accordance with the Code of Student Rights and Responsibilities, the Code of Faculty Responsibilities, and the College of Arts and Sciences Statement of Academic Discipline.
8. Each GTA must follow all University safety regulations and other safety instructions provided by the Senior Instructor. Safety instructions must be given to the students by the graduate assistant and policies strictly enforced.
9. The GTA is expected to be fluent in the English language and to possess good communication skills.
10. Students supported as a GTA are not permitted to accept other employment without written consent of the Department Chair and Dean's Office.

Ph.D. students are eligible for departmental funding for a period not to exceed 10 semesters (excluding summers) from the date of entering the chemistry program. Ph.D. students may appeal in writing to the Director of Graduate Studies for one additional semester. The Director of Graduate Studies will consult with the departmental graduate admissions committee in reviewing all appeals. M.S. students are eligible for departmental funding for a period not to exceed 5 semesters (excluding summers) from the date of entering the chemistry program. Any student may request an unpaid leave of absence at any time. Any leave granted must carry with it a stipulation in writing as to whether the leave counts toward the funding time limit.

Teaching Assignments

GTA duties may include recitation sections, laboratory instruction, and/or grading. Each teaching duty is assigned a point-value according to the guidelines below. Point-values accumulate during the academic year (Fall – Summer). GTA duties will be announced by e-mail.

Guidelines:

- The points earned for a particular GTA assignment will be determined using the GTA Assignment Point System Table below.
- A GTA with a 12-month appointment (\$23,000) needs to have a combined total of 38 to 42 points in her/his teaching duties from the Fall, Spring, and Summer terms.
- Each GTA will have the opportunity to provide their preferred courses by filling out the form on page 3 of this document prior to each semester and giving it to the Information Process Specialist in the office. A reminder and due date for this form will be sent to the GTAs by email before each Fall, Spring, and Summer term.
- Each instructor in charge of GTAs will have the opportunity to provide their GTA preferences for their course. This will be done by email correspondence between the GTA Assignment Committee and instructors.
- The selection of courses to be taught by a GTA will be based on the faculty's stated needs/preferences and the GTA's stated preference and expertise.
- Once the teaching assignments are determined for a given semester, the list of GTAs assigned to each course and the corresponding points will be distributed to all faculty members and graduate students.

TA Assignment Point System

Course	Description	Points
CHEM 103	Lab	5 pts per section
CHEM 105	Recitation/Grading	6 pts
CHEM 201	Recitation	3 pts per section
CHEM 202	Recitation	3 pts per section
CHEM 207*	Lab	3 pts per section
CHEM 208*	Lab	3 pts per section
CHEM 209 ^x	Lab	4 pts per section
CHEM 210 ^x	Lab	4 pts per section
CHEM 343	Lab	8 pts per section
CHEM 344	Lab	8 pts per section
CHEM 441	Recitation	4 pts
CHEM 445	Grader	1 pt per section
CHEM 450	Recitation	5 pts per section
CHEM 461	Recitation	4 pts
CHEM 462	Recitation	4 pts
CHEM 470	Lab	8 pts per section
CHEM 515	Recitation	4 pts per section
CHEM 527/528/529	Lab	10 pts for the 1st section & 5 pts for every other section
CHEM 546	Lab	12 pts for lab preparation + 3 pts for each section
Grading Pool [#]	Grading/Proctoring	1 pt for every 10 hours

*The Chem 207/208 sequence is considered as a single course. ^xThe Chem 209/210 sequence is also considered as a single course for bonus-counting purposes. [#]Each GTA in the grading pool must keep a log of the number of hours devoted to proctoring/grading. A copy of this log must be

given to the chair of the TA Assignments Committee at the end of the term in order to earn the points.

Bonus Points: A 2-point bonus will be added for GTAs teaching two different courses within the same semester. A 4-point bonus will be added for three different courses.

GTA shadowing: An international GTA that is unable to teach during the first term will be required to shadow another GTA. The number of points assigned for shadowing will be 40% of that for the regular GTA assignment. Grading or other assignments that do not involve independent teaching may be added.

Deductions: It is imperative that all GTAs be present during the week before classes start. Failure to meet this requirement will lead to a reduction of 3 points. Because of this requirement, foreign students should be aware of visa issues and should consult with their advisors regarding their trips abroad.

Tutoring

Graduate assistants may tutor undergraduate students as a means of supplementing their stipend with certain restrictions. Under no circumstances shall the GTA tutor a student in his/her lab or recitation section or another section of the same course. Tutoring must not conflict with teaching or research obligations.

Safety

The Safety Director for the Department of Chemistry acts as the liaison with the University Department of Environmental Health and Safety (DEHS, 852-6670) and enforces government regulations as they pertain to hazardous materials and safety (eg. OSHA). Graduate students are required to attend a presentation dealing with safety issues as well as a training session on hazardous waste treatment procedures (DEHS). **These sessions are mandatory and are typically included in the new student orientation.** Students are also required to read both the Department and University Safety Manuals, copies of which can be found in research laboratories or obtained from the Safety Director. GTAs will receive an additional course specific safety training from the senior instructor.

Chemistry Graduate Student Association (CGSA)

The CGSA is the duly constituted member of the Student Government Association which represents students enrolled in the graduate program of the Chemistry Department of the University of Louisville. The CGSA is organized by the chemistry graduate students for the purpose of providing an official body to represent the chemistry graduate students to both the Chemistry Department Faculty and to the University. The aims of this association are to discuss the needs and problems of the chemistry graduate students, to inform students of their rights and responsibilities, and to protect the chemistry graduate students' rights and privileges. Present functions of the CGSA include securing travel money from the GSC for graduate students to attend professional meetings, organizing a welcoming picnic for new graduate students each fall, and organization of a Distinguished Lecture Series.

The officers of the CGSA are President, Vice-President, Secretary-Treasurer, and a CGSA representative to attend mandatory meetings of the Student Government Association (SGA) and the Graduate Student Council (GSC). Two CGSA officers may also attend meetings of the Chemistry Faculty. The officers, along with a faculty advisor, are elected annually during the spring semester of the academic year. The names of current officers may be obtained from

the Chemistry Department office, and a copy of the CGSA constitution is available to all graduate students from the CGSA officers.

Administrative Services

1. **Chemistry Office:** The Chemistry Office is located in room 138 of the Chemistry Building. Office hours extend from 8:00 am to 4:30 pm Monday - Friday. Students should not be in the office during non-office hours.
2. **E-mail:** You need to check your UofL e-mail account for updates and notices. If you prefer to use a different address, it is recommended that you forward your UofL e-mail to that account.
3. **Mailboxes:** Graduate student mailboxes are located in the Chemistry Office in room 138. It is recommended that students check their mailboxes daily for important announcements.
4. **Office Supplies:** Office supplies are available to graduate teaching assistants for use in courses which they are teaching. These general supplies, such as, paper, paper clips, pens and pencils, may be obtained from one of the staff members in the Chemistry Office.
5. **Announcements:** Announcements pertinent to the Chemistry Faculty and graduate students are e-mailed and/or posted in the Chemistry Department Office, room 138. These announcements concern upcoming seminars, meetings, career opportunities, etc.
6. **Paychecks:** Paychecks will be deposited in your checking account on the thirtieth day of each month or the last weekday preceding the thirtieth day. Inquiries about pay should be made to the Information Process Specialist or Unit Business Manager in the Chemistry Office. Please do not contact the Payroll Office directly.
7. **Telephone Usage:** Telephones located in the research laboratories may be used by graduate personnel. If you need to make a long distance business call check with your research advisor.
8. **Keys:** Graduate students can obtain keys to the building and their teaching and research labs from the Information Process Specialist in the Chemistry Office. Keys to instrumentation areas are provided based on research needs.
9. **Photocopies:** Graduate students can obtain photocopies for use in their instructional, research and seminar activities.
10. **I.D. Cards:** Picture identification cards are prepared at registration time in the fall for each student. I.D. cards allow students several privileges, including use of the gym, use of library materials, check cashing privileges at the Campus Bookstore, and a 10% discount (for GTA's) on educational material in the Campus Bookstore.
11. **Desk Space:** Students are temporarily assigned office space in a general TA office in the Chemistry Building. Once a student has chosen a research advisor, desk space will be assigned to him/her in that laboratory. The University is not liable for personal losses from the building.
12. **Bus Service:** Bus service throughout the Louisville area is available through TARC (Transit Authority of River City). With a current UofL I.D. you can ride anytime, anywhere on TARC at no charge. Scheduling information can be obtained by calling 585-1234, visiting the Department

of Public Safety (located in the Parking Structure on Floyd Street) or online at <http://www.ridetarc.org/>.

13. Parking: Any graduate student may purchase a “green” student parking pass from the Department of Public Safety. GTA’s have the option to purchase a “blue” faculty/staff parking permit.

14. Vending Machines: Vending Machines are located in the lower level of the Chemistry Building.

15. Bookstore: The campus bookstore is located on the ground floor of the Student Activities Center. General supplies and current textbooks are normally in stock. Graduate teaching assistants are entitled to a 10% discount on all educational material.

16. Emergency Numbers:

Department of Public Safety	852-6111
Health Services	852-6479
Louisville Fire Department	587-3141
Louisville Police Department	574-7111
Emergency Medical Service	587-3911

17. Health Services: The University Health Service is located on Brook Street, between the Houchens Building and the Student Activity Center. Information may be obtained by calling 6479.

18. Housing: For information on university housing and apartments located close to campus, contact the University Housing Office at 6636.

19. Check Cashing: Personal checks may be cashed at the Bursar’s Office, located in the Houchens Building. A valid student I.D. card is required.

20. Campus Post Office: The campus post office is located in the north end of the Houchens Building. Letters and packages may be mailed within the university if marked “Campus Mail”. Stamps may be purchased in the post office and bookstore, located in the Student Activities Center.

Requisitions/Orders

Items, such as chemicals or glassware, which are not available in the stock room (B-38) or main office are usually ordered by a requisition approved by the student’s research director. Forms are provided in the main office or available electronically for submission to the Program Assistant or by email to chemistry@louisville.edu for ordering. These forms require information about the order (item name, catalog number, quantity, price), an account number and the research director’s signature.

Library Services

Libraries on the Belknap Campus include the William F. Ekstrom (main) Library. In addition, the Kornhauser Health Sciences Library is located downtown on the Health Sciences Campus. Library hours vary and can be determined by calling 6758. Chemistry journals and books are located in the Ekstrom Library. The holdings can be searched by computer and books can be checked out with a student ID. Computerized searching of Chemical Abstracts is also available. Photocopy services are available for a small fee. Your research advisor may issue a

copy card for copying research related articles. Library personnel can assist you in taking advantage of these services. Electronic databases and electronic journals are available to UofL personnel (<http://louisville.edu/library/research/>). There is an automated system that can be used to request copies of articles that are available online. Additional books and journals not available at U of L libraries may be obtained through interlibrary loan.

Computer Services

The University computing systems and networks are maintained by the office of Information Technology (<http://www.louisville.edu/it>) located in the Miller Information Technology Center. All graduate students are required to have e-mail accounts on the university system. These accounts will be activated the week before classes begin. The Department of Chemistry also maintains several workstations for computational chemistry. Since these computers are restricted to computational research or NMR calculations, keys to these rooms are issued to only a limited number of groups for after-hour use. Students must be trained and approved for these computers and only then may use the computer account assigned to their research group. The importing or loading of programs not approved by the system administrators will result in the loss of privileges for the individual and possibly for the research group.

Technical Services

The Chemistry Department maintains an electronics shop (Rm. B-36) and a modest machine shop (Rm. B-34). A machine shop is also maintained by the Physics Department in Rm. 101 of the Natural Science building.

Instrumentation

Chemistry graduate students have access to a wide range of instrumentation belonging to the Chemistry Department, other U of L departments, or individual research groups. Major pieces of instrumentation are listed online at <http://www.louisville.edu/a-s/chemistry/facil.htm>. Additional items such as inert atmosphere glove boxes, chromatographs, electrochemical instrumentation, etc. are found throughout the department in individual research labs.

Most departmental instrumentation is “hands on” and requires training and approval from Dr. Stolowich for NMR instruments and Dr. Maurer for the MALDI-TOF/MS. The exception is X-ray crystallography which is provided as a service to the department by Dr. Mark Mashuta. Students may be trained and approved for this equipment by taking Chem 688 and a subsequent independent study course (651 or 652). Use of instrumentation in other research groups or departments is with their permission only and must be arranged through your research advisor.

Consult with the departmental Instrumentation Specialist if there are any problem with instructional instrumentation.

Timeline

Ph.D.

1st Semester	Begin coursework Attend seminars Interview at least 3 faculty Join a research group	2nd Semester	Continue coursework Start research Attend seminars Literature seminar (early) Start cumulative exams
3rd Semester	Continue/Finish coursework Literature seminar (deadline) Continue research Continue cumulative exams Form dissertation committee	4th Semester	Finish coursework Continue research Finish cumulative exams
5th Semester	Continue research Research proposal (deadline)	6th Semester	Continue research
7th Semester	Continue research Research seminar (early)	8th Semester	Continue research Research seminar (deadline)
9th Semester and beyond	Continue/Finish research Write and defend dissertation		

*MS degree awarded upon completion of research proposal.

Masters Degree (thesis)

1st Semester	Begin coursework Attend seminars Interview at least 3 faculty Join a research group	2nd Semester	Continue/Finish coursework Start research Literature seminar (early)
3rd Semester	Finish coursework Literature seminar (deadline) Continue research Form thesis committee	4th Semester and beyond	Continue/Finish research Write and defend thesis

Masters Degree (non-thesis)

1st Semester	Begin coursework Attend seminars Interview at least 3 faculty Select a mentor	2nd Semester	Continue coursework Literature seminar (early)
3rd Semester	Literature seminar (deadline) Continue/Finish coursework	4th Semester	Finish coursework Complete Research Proposal