

# Chemistry Graduate Student Handbook University of Virginia

**2022-2023**

(Update version: 9/14/2022)

## INTRODUCTION

This summary is intended to provide an overview of the graduate program in Chemistry at the University of Virginia. A number of items summarized here are discussed in more detail in other University of Virginia publications such as the Graduate Record. You should become familiar with these resources and take advantage of advice from the faculty and staff of the University for assembling a graduate educational experience that is optimal for you.

The description of the degree requirements contained herein is a primary statement of components of the requirements that are unique to the Chemistry Department. These requirements do not displace the more general statement of the graduate degree requirements provided in the Graduate Record, which must be satisfied in all cases. More information about the Graduate School of Arts and Sciences can be found at:

<https://graduate.as.virginia.edu/>

We have provided an academic calendar, which includes a number of activities and deadlines. While we will generally provide reminders throughout the year, the ultimate responsibility for your program rests with you. Please consult this guide, which will be periodically updated [on-line](#), for the duration of your graduate experience.

## 2022 - 2023: GRADUATE PROGRAM ADMINISTRATION

Director of Graduate Studies: Brent Gunnoe, [tbg7h@virginia.edu](mailto:tbg7h@virginia.edu), 982-2692, Rm. 239

Graduate Studies Coordinator: Sage Bradburn, [cmb7y@virginia.edu](mailto:cmb7y@virginia.edu), 924-7014, Rm. 188

Graduate Student Council-President: Abigail Graham, [acg6en@virginia.edu](mailto:acg6en@virginia.edu)

<b>Schedule for 2022-23</b>	
<b>AUGUST</b>	
1	Student 2022-23 health insurance plans begin
23	Classes begin
29	Last day to register/enroll in SIS (students not enrolled will be cancelled)
31	Deadline to waive UVA student health insurance
<b>SEPTEMBER</b>	
6	Last day to add courses
7	Last day drop courses
8	Last day withdraw from courses (with a “W” on transcript)
30	<a href="#">Deadline to apply in SIS to graduate in December</a> Deadline for 4 <sup>th</sup> year students to schedule seminars
<b>OCTOBER</b>	
1-4	Reading days
18	Last day to withdraw from a class
31	Spring course enrollment begins
<b>NOVEMBER</b>	
1	<a href="#">Deadline for all students planning to graduate in December</a> to verify they have met all academic requirements and their transcripts are accurate, and for Ph. D. students to complete the <a href="#">Survey of Earned Doctorates</a>
8	Election Day (no classes)
15	Deadline for 1 <sup>st</sup> year students (who entered in August) to select research advisors
	Deadline to apply for travel funds for conferences in January-March
	Last day withdraw from courses (with a “W” on transcript)
23-27	Thanksgiving recess
28	Deadline for December graduates to submit completed <a href="#">Final Exam Forms</a> —with their personal information and the names and signatures of their advisors/committee members--to the graduate coordinator by 8 AM
30	Deadline for Ph. D. students graduating in December to upload dissertations to Libra
<b>DECEMBER</b>	
6	Last day of classes
8-16	Exams begin
11 & 14	Reading days
16	Fall degrees conferred
<b>JANUARY</b>	
5	Candidacy publications assigned to 2nd year students
16	Martin Luther King (MLK) Day, University Holiday
18	Classes resume
19	2 <sup>nd</sup> year students submit written thesis research overviews
TBD	Deadline to register/enroll in classes
26	2 <sup>nd</sup> year students submit written publication critiques
TBD	Last day to add courses
TBD	Last day to drop courses

TBD	Last day to withdraw from classes
31	Deadline to apply in SIS to graduate in May
<b>FEBRUARY</b>	
6-10	Dates for 2nd year Ph.D. candidacy exams
15	Deadline to apply for departmental travel awards for April 1 - June 30 travel
<b>MARCH</b>	
4-12	Spring recess
15	Deadline for 1 <sup>st</sup> year students (who entered in fall) to select research advisory committees
TBD	Deadline to withdraw from a class (with a “W” on transcript)
17-19	Visitation weekend for prospective graduate students
TBD	Enrollment opens for fall courses
<b>APRIL</b>	
1	<a href="#">Deadline for all students planning to graduate in May</a> to verify they have met all academic requirements and their transcripts are accurate, and for PhD students to complete the <a href="#">Survey of Earned Doctorates</a>
13	Poster sessions for 3rd year students
14	Research advisor selection due (for 1st year students who entered in January)
26	Deadline for students graduating in May to submit completed <a href="#">Final Exam Forms</a> —with their personal information and the names and signatures of their advisors/committee members--to the graduate coordinator by 8 AM
30	Deadline for Ph.D. students graduating in May to upload <a href="#">dissertations to Libra</a>
<b>MAY</b>	
1	Research advisory committee selection due for 1st year students who entered in January
2	Classes end
7 & 10	Reading days
4-12	Final exams
15	Deadline to apply for departmental travel awards for July 1 - September 30 travel
19-21	Finals Weekend
31	Annual Research Report & CV due (for 3rd year students and above)
<b>JUNE</b>	
<b>30</b>	Last day to apply in SIS to graduate in August
<b>JULY</b>	
1	<a href="#">Deadline for all students planning to graduate in August</a> to verify they have met all academic requirements and their transcripts are accurate, and for PhD students to complete the <a href="#">Survey of Earned Doctorates</a>
25	Deadline for students graduating in August to submit completed <a href="#">Final Exam Forms</a> —with their personal information and the names and signatures of their advisors/committee members--to the graduate coordinator by 8am
31	Deadline for August Ph.D. graduates to upload dissertation to Libra Last day of 2022-23 health insurance plan coverage

## **ADMISSION AND ORIENTATION**

Admission to the graduate program in chemistry is based on a student's previous college record, letters of recommendation and related experience. In a few cases, students may be admitted as continuing education students because they do not appear to have the necessary background for entering the degree program directly. Such students may be admitted to the degree program upon satisfactory demonstration that they can perform at a requisite level to complete degree requirements satisfactorily.

### **ADVISING**

The Graduate Studies Director and selected faculty members have the primary responsibility for advising students who have not chosen research advisers. First year students should consult with their discipline specific faculty adviser and the Graduate Studies Coordinator before making any registration changes such as dropping a course. The usual expectation is that all students will complete five to six graduate level courses during the first year, the professional development seminars CHEM 7010, 7011, 7020 and 7021 as well as topical research (CHEM 99XX). Completion of six graduate level courses by the end of the fourth semester is required, and this requirement is generally satisfied by taking CHEM 5XXX or graduate courses outside of the Chemistry Department.

After research adviser selection, the Graduate Studies Committee, in consultation with the research adviser and the student, will establish a three-person committee to serve as the student's research advisory committee. This committee will monitor the student's subsequent research and academic progress. The three-person committee will serve on the preliminary qualifying examination for admission to candidacy, generally attend the student's third year research poster presentation, and serve on the final dissertation examination committee.

### **REGISTRATION**

Generally, all students beyond their first year are required to register for at least 12 credit hours every fall and spring semester until a degree is granted. Registration during the summer is not usually required unless the student is defending an M.S. or Ph.D. degree during the summer academic period. First year graduate students should register for 15 credit hours/semester. At least 72 credit hours (comprising at least 24 credit hours of coursework) are required for a Ph.D. degree, and at least 30 credit hours (comprising at least 24 credit hours of coursework) are required for a Master's Degree. After all course requirements are met, students typically register for credit hours of 9xxx-level topical research under their research advisor sufficient to fill their 12 credit hours/semester requirement.

### **SUMMER REGISTRATION**

Only students planning to graduate during the summer with their thesis defense completed before August 1 need to register for summer session. If the student is defending during the summer session, summer registration should be for one credit of topical research (CHEM 99XX). Students can petition for reduced credit during their last semester.

International students should consult with the International Studies Office before making this decision. If you are approved for registering for reduced credits, you will need to fill out the

Reduced Course Load (RCL) request form. The Graduate Studies Coordinator can assist with this form as needed. Your advisor will need to approve this and then it will be approved by the ISO office. You may then register for part time status (1) credit for your last semester.

### **GRADUATE RECORD**

The Graduate Record provides a comprehensive set of guidelines and regulations for the College of Arts and Sciences graduate programs. It can be found at the following link:

<http://records.ureg.virginia.edu/content.php?catoid=53&navoid=4238>

### **AFFILIATED STATUS**

An advanced doctoral or master's student who has fulfilled all school- and program-level degree requirements with the exception of the dissertation/thesis may petition for Affiliated Status. This status does not require registration for credit during the semester of defense. If a student is not registered during a semester, they can still defend during that semester if they are on Affiliated Status. It is appropriate for students who *only* need to write their dissertation and will not be engaging in research activities. To request Affiliated Status, students submit the Doctoral/Thesis Completion [form](#) to the Director of Graduate Studies. Once approved for this status, students are not eligible to return to full-time study in a degree program, but may petition to renew this status each term for up to four (two for the master's degree) consecutive terms. Students on this status pay an associated fee that is substantially lower than tuition and comprehensive fees. Generally, and when financially possible, the Chemistry Department will pay for one semester of affiliated status. Affiliated status can be extended beyond one semester. In such cases, the student will be required to cover the expense of additional semesters on Affiliated Status.

Doctoral/Thesis Completion in Affiliated Status does not constitute enrollment, but provides continued NetBadge computer system privileges, including access to UVA e-mail and electronic library resources. **Students on Affiliated Status do not have an active student I.D. card or access to University labs, facilities or student services (including Student Health or student health insurance). They are not eligible for graduate assistantships or forms of departmental-based financial support.** A student on Affiliated Status can have employment outside of the Chemistry Department. Students with outstanding federal student loans will no longer be in deferment and will begin repayment once the grace period has ended. Students should contact Student Financial Services before petitioning for this status if they have questions related to student loans. **We do not advise Affiliated Status for international students, unless approved by ISO, due to visa concerns.**

### **CONTINUED EMPLOYMENT AFTER GRADUATION**

A graduate student (and undergraduate student) can be hired to continue research for the summer after a May graduation because their status as a student does not end until the next regular academic term begins, which in this case is the Fall term. Health insurance will end on August 14<sup>th</sup> regardless. This is not possible for an August or December graduation because the next term begins immediately. In this case, a student would need to be hired as a postdoc, which generally requires creation of a position through HR and advertisement and search.

## **THE HONOR CODE**

The University of Virginia operates with an honor system. You are responsible for understanding this honor system both as a student and as a Teaching Assistant. In addition, the foundation of graduate work is the pursuit of new knowledge based on the most rigorous application of the scientific method. Violations of scientific integrity such as fabrication of data, plagiarism, or misrepresentation of data are taken seriously, not only by the Chemistry Department and the University, but also by the various U.S. Government agencies that fund the bulk of the graduate research performed in the Chemistry Department. Ethical violations can result in dismissal from the program.

## **CHEMISTRY DEPARTMENT SUPPORT FOR STUDENT TRAVEL**

As long as funding is available, the Chemistry Department offers travel awards to support graduate student travel to conferences. These awards are made on a quarterly basis. Recently, awards have typically ranged between \$200 and \$400 with the amount increasing with year in our graduate program. The program can be discontinued during the academic year if funds become unavailable. Some additional notes are provided below:

1. Students can receive travel support for only one conference in an academic year (August through July).
2. For scientific conferences, requests typically come from students with a formal role at the conference (presenting a paper or poster; serving as chair or discussant; member of a professional committee meeting at the conference, etc.). In addition, the committee will consider travel support for conferences that have a clear professional development impact for the student, even in the absence of a student presentation. This could include, but is not necessarily limited to, conferences held by organizations that support students from underrepresented minorities such as NOBBChE or SACNAS.
3. Reimbursement for expenses will follow standard UVA policies.

Opportunities to submit for Departmental travel awards come up quarterly, as outlined below. The Graduate Studies Coordinator will send emails announcing due dates in advance of the deadline, and notifications of outcomes are generally sent by email within two weeks.

<b>Submission Deadline</b>	<b>Travel period</b>
Mid August	October - December
Mid November	January-March
Mid February	April – June
Mid May	July - September

## **FACILITIES**

### **SAFETY, SECURITY AND HOUSEKEEPING**

Building security is important for the personal safety of all of us because of potential hazards caused by uninformed people entering research areas. Please report suspicious behavior to the

Chemistry Department office (4-3344) or to UVA Security (4-7088). After hours, building doors to the research areas are locked. Help maintain security in these areas by keeping these doors closed.

Safety depends on the attention to almost every detail in the laboratory. We ask for your help in maintaining the building in a safe configuration by the removal of clutter, the correct disposal of chemical waste, and by your attention to the health hazards of chemicals used in the laboratory.

Safety goggles or glasses are required anytime experimental work is in progress. Teaching Assistants must wear safety goggles or glasses when in the undergraduate laboratories. Contact lenses pose a particular hazard when doing chemistry because of the added difficulties of flushing the eye following a chemical splash or spill. Their use is discouraged.

There may be experiments that you will need to leave unattended. In such cases, leave information clearly visible that instructs an emergency worker about the character of the experiment, solvents, etc. Make sure that you have minimized fire and flood potential any time you have an experiment running. Water pressures change throughout the day; therefore, if water hose connections are used, tighten those connections with wire (or similar) to secure them against failure. Examine sink drains to make sure water will flow freely.

For chemicals that must be stored cold, use an explosion-proof refrigerator. Do not place food in a chemical refrigerator, and do not eat in chemical laboratory space. People working with radioactive materials must be trained and competent in the safe use of such materials.

As a safety precaution, no one is permitted in the laboratories or stockrooms without proper clothing. Teaching Assistants are expected to enforce this policy in their undergraduate laboratory section.

Bring any safety concern to the immediate attention of the Department Chair.

EMERGENCY 9-911
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ENVIRONMENTAL HEALTH & SAFETY 2-4911
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### **STUDENT ID BADGES**

Entering Ph.D. and non-thesis Master's students may obtain a SMART student ID badge at the University ID Card Office, which is located on the corner of Alderman and McCormick Roads in the Observatory Hill Dining Hall, Lower Level. Meter parking is available on McCormick Road. Their office hours are 8:00 A.M. - 5:00 P.M., Monday-Friday. There will be a \$5.00 charge for the badge. Your names will be submitted for approval before you arrive. If any problems arise please contact Sage Bradburn, the Graduate Coordinator ([cmb7y@virginia.edu](mailto:cmb7y@virginia.edu))

### **KEYS**

Graduate students may obtain keys to laboratories from Ed de Bary in Room 465. A deposit is generally required. Keys must be returned upon termination of your appointment.

## **MAIL**

Student mail is handled through the stockroom, and the mail for each research group is held there. Likewise, outgoing mail should be placed in the labeled basket provided at the Storeroom.

## **PROGRAM INFORMATION ON THE WEB**

<http://chemistry.as.virginia.edu/graduate>

## **LIBRARY RESOURCES**

Bookmark the Chemistry Library Guide: <https://guides.lib.virginia.edu/chemistry>

This web site provides important information about various library resources and procedures.

## **FINANCIAL SUPPORT**

### **TEACHING ASSISTANTS**

Unless an alternative arrangement is made, Ph. D. students are required to serve as Teaching Assistants for a minimum two semesters. The gross wages after payment of tuition and fees for the academic year 2022-2023 is \$21,000. These wages are paid over 20 bi-weekly pay dates. The first pay date for the fall semester will be Friday, September 2, and paychecks are delivered every other Friday through May 26, 2023. The Chemistry Department pays all academic year tuition and fees directly to the Bursar's Office. Certain students may have been awarded additional fellowships on the basis of outstanding promise or accomplishments. For GTA wages the minimum amount of payroll taxes are withheld based on your enrolled student status, and a W-2 form will be created for this work. International students may experience different withholding taxes based on the tax treaty between the U.S. and their home country.

Teaching Assistants must attend all the laboratory, discussion, tutoring sessions and office hours which they were assigned. Teaching assistants are professional members of the teaching staff of the Chemistry Department, and it is an expectation that they will provide undergraduate students with a high quality of education. Teaching Assistants normally have 5-10 contact hours per week, which may require a total investment of 15-20 hours per week including time for grading examinations, quizzes, and laboratory reports. Note that TA contracts stipulate up to 20 hours of effort per week. As a representative of the University of Virginia, Teaching Assistants are required to follow the regulations of the University with respect to all aspects of their professional conduct. Trading duties with other assistants to accommodate social obligations is inappropriate. At some time during the year, you may have to miss a teaching assignment because of illness or other unavoidable circumstance. It is your responsibility to arrange for someone to cover your assignment and to inform the individual in charge of the course of this substitution.

### **RESEARCH ASSISTANTS**

Research assistantships are generally awarded from research grants to students to pursue their thesis research and are based on good academic standing and a record of due diligence with respect to achieving the goals of their research program. Funds for research assistantships are



awarded based on the recommendation of the individual faculty member responsible for the grant and the availability of funds in each research group.

The gross wages for research assistants after tuition and fees for the academic year 2022-2023 is \$21,000. These wages are paid over 20 bi-weekly pay dates. The first pay date for the fall semester will be Friday, September 2, and the last pay date for the spring term is May 26. It is possible that your form of support, therefore your pay intervals, changes from the Fall to the Spring term. If this happens, the department will make our best effort to inform of this change. The Chemistry Department pays all academic year tuition and fees directly to the Bursar's Office. Certain students may have been awarded additional fellowships on the basis of outstanding promise or accomplishments. For GRA wages the minimum amount of payroll taxes are withheld based on your enrolled student status and a W-2 form will be created for this work. International students may experience different withholding taxes based on the tax treaty between the U.S. and their home country. Wages are paid over the summer bi-weekly pay periods and in exchange for work and for those not enrolled in classes. They have FICA taxes withdrawn. Stipends are not in exchange for work and are paid out monthly.

#### **SUMMER RESEARCH ASSISTANTSHIP AWARDS**

The summer 2023 net wages after payment of tuition and fees are \$7,000 for graduate research assistants. These wages will be paid in 6 bi-weekly payments. During the summer months, graduate students generally are not enrolled in classes, and as a result their summer pay will be subject to the 7.65% FICA tax.

#### **CONTINUATION OF FINANCIAL AID**

The Chemistry Department provides financial assistance to as many of the graduate students as possible in the form of teaching and research assistantships or fellowships. Continued support is dependent upon available departmental resources and satisfactory progress by the student. Students who terminate degree programs or transfer to other Departments of the University will no longer be eligible for appointment as Teaching Assistants or fellowships beyond the semester in which the transfer takes place or the degree is awarded.

#### **UNIVERSITY AND EXTERNAL FELLOWSHIPS**

Chemistry graduate students are eligible for fellowships from the Graduate School and the Chemistry Department. The standard fellowship provides the same base living support level of \$10,500 per academic term and \$7,000 for the summer term. Generally, fellowships are paid out as stipends on a monthly basis without payroll taxes withheld. No W-2 form will be issued for fellowship stipends and it is your responsibility to determine the extent of tax liability for this financial assistance. International students may experience different withholding taxes based on the tax treaty between the U.S. and their home country. You are also able to apply for competitive federal, industrial, and foundational fellowships derived independently and external to the University. Students can retain a level of GSAS living support in combination with externally awarded living support up to a threshold of 130% of the department's standard living support offered upon admission. Some external fellowships mandate even higher living support which is honored. Generally, taxes are not deducted from fellowship payments and again no W-2 form will be issued. It is your responsibility to determine the extent of tax liability for this financial assistance.

The Graduate School of Arts and Sciences offers competitive fellowships that eligible Chemistry graduate students should consider applying for. More information can be found at:

<https://graduate.as.virginia.edu/fellowships-and-grants>

### **UNIVERSITY RECESSES**

The responsibility of Teaching Assistants generally begins with the organization meeting at the beginning of each term and ends when the laboratory check-out is complete and the final examination in the course has been graded and recorded. After these responsibilities have been completed, a student may take recess from teaching responsibilities until the organizational meetings of the following semester. Other requirements of the graduate program may require students to be on grounds when classes are not in session, e.g., research activities, etc. Once an adviser is selected, it is the student's responsibility to schedule his/her time in concert with the research activities in the adviser's group.

### **OUTSIDE EMPLOYMENT**

It is expected that students receiving normal levels of financial support through Teaching Assistantships, Research Assistantships or Fellowships will devote themselves completely to their graduate program of study and research. Therefore, students are expected to refrain from employment outside of the Chemistry Department when appointed full-time in teaching or research assistantship or a fellowship. In cases where the student and the research advisor deem additional employment appropriate, especially if there is a professional development component, the student must send a request via e-mail to the Director of Graduate Studies that describes his or her progress toward the degree, the proposed weekly level of outside effort and payment details, the rationale for the overload, and confirmation of whether the student holds an international visa (if applicable). If the Director of Graduate Studies supports the request, he or she will forward the e-mail to the GSAS Associate Dean with an endorsement, confirming the justification provided by the student. The GSAS assistant dean will review and respond to the petition.

Paid Opportunities through PhD+ and related programs: Paid opportunities through PhD+, as well as related professional development opportunities, generally require a reduction in time dedicated toward research responsibilities. For the 2022-23 academic year, the Chemistry Department has developed and will implement the following guidelines when graduate students take on *approved* and paid positions outside of their typical chemistry appointment such as a GTA, GRA or departmental fellowship.

1. A position that requires 1 to 4 hours of extra work per week will be considered to have a minimal impact. There will be no adjustment in GTA, GRA or departmental fellowship payments to the student.
2. A position that requires  $\geq 5$  hours of extra work per week will be considered to have a significant impact. The graduate student's support by GTA, GRA or departmental fellowship

will be reduced using the following: a. 5 hours per week will result in a 12.5% reduction. B. 10 hours per week will result in a 25% reduction, etc.

NOTE: Due to federal regulations, international students cannot be paid for work above the standard GTA or GRA appointment unless the funds are from a fellowship account and not committed for specific work.

## **HEALTH MATTERS**

Ph.D. students are provided with [healthcare](#) on an annual basis with a start/renewal date of August 1. If a student has comparable healthcare provided externally (e.g., by their parents) and would like to waive the UVA healthcare they can do so and receive a modest financial compensation.

### Parental Leave

The University will offer eight consecutive weeks of parental accommodation to full-time degree-seeking graduate students who are appointed to service as a graduate teaching assistant (GTA), instructor of record, or graduate research assistant (GRA), who experience a Parental Accommodation Event, and who meet the eligibility criteria defined below. Individuals who meet the eligibility requirements will receive the full wages associated with their support for a period of up to eight weeks and release from the duties associated with such support. Individuals will maintain their status as a full-time student during the release period. Students who require additional unpaid release time should consult policy [PROV-027: Academic Accommodation for Graduate and Professional Students Who Experience Significant Life Events](#) and the Graduate Record. More information can be found at:

<https://uvapolicy.virginia.edu/policy/PROV-028>

To request parental leave, the student should contact the Director of Graduate Studies with a request by email, who will forward the request with endorsement to GSAS. It is best if the student's research advisor is copied on the request. Also, if more than eight weeks are requested, please indicate the time period in the email. If approved, the student will receive notice of the relief from GSAS. The Family Medical Leave Act is only involved if the student will be taking additional unpaid time beyond the six-week funded relief period.

## **Mutual Expectations between Graduate Students and Research Advisors – UVA Department of Chemistry**

### **Overview**

The Chemistry Department at the University of Virginia seeks to provide a graduate student experience that fosters professional and academic growth in a transparent, inclusive and collegial culture. Clear statements of mutual expectations between a research advisor and their advisee are crucial for an effective and successful student-mentor relationship. Academic advising is a shared responsibility between the student and the mentor, and it plays a critical role in each student's academic life. The advisee is expected to actively develop and pursue opportunities to achieve their educational and career goals, and to seek advice as they do so. Research advisors are expected to

assist and support students in both their academic growth and professional development to promote students' career goals. To provide a framework for advisee and research advisor relationships, the graduate students and faculty of the Chemistry Department at the University of Virginia herein outline their mutual expectations. These expectations are stated with the intention of increasing transparency and establishing clear expectations and communication that will foster successful student-mentor relationships. Generally stated, graduate students are encouraged to be self-directed, responsible decision-makers, and faculty advisors are encouraged to provide advice and to support graduate student development with the targeted outcome of leading the preparation of all graduate students in the department towards a successful and timely completion of their degree and launch of their career.

### **Expectations of the Faculty Research Advisor**

It is considered that the role of the advisor is to provide research and professional guidance to help students reach their full potential and career goals. At the same time, it is imperative that the advisor ensures that each student follows the rules and regulations set forth by the University of Virginia, the Chemistry Department and the individual research group. The advisor should encourage each student, provide opportunities that allow each student to mature as a self-directed scientist, contribute to the progress of students' research projects, and be available to provide feedback to ensure that expected research quality and standards are met by the student. More specifically, faculty research advisors are expected to:

1. Work to ensure that your research environment is safe and free from harassment and discrimination and provides equitable opportunities for success.
2. Uphold the highest standards of scientific ethics such as strict avoidance of data manipulation, intentional data misinterpretation, and improper or incomplete acknowledgement of contributions by other researchers. Train students on how to do the same.
3. Establish a framework of a research project(s) with each student that can be successfully completed within the expected time frame of the program.
4. Communicate with each student regarding their Teaching Assistantship (GTA) versus Research Assistantship (GRA) assignment for each semester or summer period in a timely manner. Ideally, a change in support status should be communicated a month in advance of the next term.
5. Be accessible for discussions about research projects and professional development/career plans.
6. Participate in reading each student's annual Individual Development Plan (IDP) and provide feedback on strengths, areas for growth and progress towards their degree. This feedback should include an annual in-person meeting that is focused on student professional goals and strategy to achieve them.
7. As needed and appropriate, assist students in finding other mentors for research or professional development topics that are not your expertise as a primary mentor.
8. Encourage and support each student's submission of research to peer reviewed journals. If applicable, clearly communicate with each student the expectation of number of publications needed prior to graduation. Read manuscript drafts and provide feedback in a timely manner. Provide training to students on how to write scientifically as appropriate

for their field, including manuscripts for publications, peer review of manuscripts, and proposals or reports.

9. Encourage and support each student's attendance at local, national and international conferences to present their research.
10. Encourage and support each student's participation in departmental events including, but not limited to, weekly seminars.
11. Within the framework of program requirements, encourage and support each student's participation in professional development and other networking events. This could include teaching opportunities, presentations, internships, etc. such as PhD+ courses and workshops.
12. If a student requests, assist them with creating realistic career goals and help them work toward those goals.
13. If applicable, nominate advisee for awards if they are eligible and meet award criteria.
14. Provide letters of recommendation for each student in a timely fashion.
15. Participate in an annual review of these expectations to discuss whether they have been met by both the advisor and your advisee.

### **Expectations of the Student Advisee**

The doctoral program requires that the student take ownership of their education and research to best make use of the considerable amount of time and energy that is required for a successful dissertation that contributes to the advancement of science. The student is required to adhere to the rules and regulations set forth by the University of Virginia while meeting the requirements of the degree program. In addition, the student must adhere to requirements and meet expectations of the research advisor and the research group. It is crucial for students to follow and implement the guidance, support and encouragement that they receive from their research advisor. Although the advisor should be available for consultation and may initiate meetings, it is ultimately the advisees' responsibility to maintain regular contact with the advisor. Specifically, graduate students are expected to:

1. Interact with other group members and research advisor in a manner that contributes to a collegial and supportive work environment that is safe, equitable, and free from harassment and discrimination.
2. Adhere to the rules and regulations, policies, and procedures set forth by the University of Virginia, the Chemistry Department (as outlined in the UVA Chemistry Department Graduate Student Handbook), and the individual research lab.
3. Meet the safety and training expectations of the research advisor and research group including competence and adherence to safety protocols, chemical hygiene, biosafety (if relevant) and development of research skills necessary to execute research project(s).
4. Actively participate in discussion and planning of an original research project(s) with their research advisor that can be successfully completed within the time frame of the program.
5. Read the primary literature and reviews that provide context to the advisee's research project.
6. Meet the expectations of the research advisor and research group regarding research productivity. This includes managing time and schedules to achieve agreed upon goals in a timely manner.

7. Establish a research advisory committee with the help of the research advisor as required by the graduate program and keep the advisory committee informed about any changes that might affect the progress of research.
8. Attend and actively participate in regular meetings, such as group meetings and consultations with the research advisor to report, present and discuss research progress.
9. In consultation with their research advisor, draft manuscripts to report their research, seek feedback from advisor and peers and conduct multiple rounds of editing, submit, and revise as needed in response to peer reviews to reach publication.
10. In consultation with their research advisor, seek opportunities to present their research at local, regional and national meetings.
11. Maintain high quality records of their research progress in lab notebooks as well as electronic files.
12. Be a productive and supportive individual in their research group as well as the Chemistry Department, including assisting others and assisting with day-to-day operations in the group, when appropriate.
13. Actively plan and discuss their career trajectory after graduation with their research advisor. The student should pursue opportunities to accomplish career goals and professional development. This could include research publications, teaching opportunities, outreach activities, participation in student organizations, conferences, internships, additional employment etc.
14. Uphold the highest standards of scientific ethics such as strict avoidance of data manipulation, data misinterpretation, improper or incomplete acknowledgement of contributions by other researchers. Ask for guidance from advisor or graduate studies director if unsure.

The mutual expectations were developed with the consultation of:

<https://catalog.upenn.edu/graduate/academic-resources/advising-mentoring/expectations-responsibilities/>

[https://socialwork.uw.edu/sites/default/files/sswfiles/programs/phd/Mentoring%20Guidelines\\_Final.pdf](https://socialwork.uw.edu/sites/default/files/sswfiles/programs/phd/Mentoring%20Guidelines_Final.pdf)

<https://ecology.colostate.edu/expectations-for-student-advisor-relationship/>

<https://advisingcenter.uiowa.edu/advising-expectations>

## **OVERVIEW OF DEPARTMENTAL ACADEMIC REQUIREMENTS**

The Graduate Program in Chemistry will provide a platform from which one may build expertise and continue a life-long process of inquiry and growth. It is not the intention of this program to provide detailed training in every aspect of chemistry or its applications. Rather, it is our goal to provide the fundamentals for a much-expanded personal development, provide the environment where intellectually active people may thrive, and provide the facilities to conduct research to advance new chemistry and science. The faculty members provide a number of aids in this process of preparation including graduate courses, seminars, examinations, and considerable personal assistance and advice. Although the emphasis of graduate education is on student initiative, all programs have several mileposts to assist both the faculty and students.

## I. The First Year of Study

### A. Areas of Study

Although graduate students are not formally assigned to a sub-discipline, the department has identified several broad areas of study in which *graduate courses and course advising are categorized*. Listing of courses in these areas is not intended to, and does not, set course requirements. Each student's course selection is based on his/her research and professional interests and are set based on consultation with faculty advisors. The goal of course listing by subdisciplines is to provide examples of collections of courses that students with similar research interests might take. The areas of organization of course advising are listed below:

Astrochemistry  
Biophysical  
Chemical Education

Bioanalytical Chemistry  
Chemical Biology  
Physical Chemistry

Synthesis – Inorganic Focus

Synthesis – Organic Focus

**B.** Lecture Course Offerings (note: some chemistry course numbers/names have changed and not all UVA databases have caught up yet).

Course #	Course Name	Fall/Spring
CHEM 5110	Organic Chemistry III: Structure, Reactivity, and Mechanism	Fall
CHEM 5120	Organic Chemistry IV: Synthesis	Spring
CHEM 5180	Instrumental Theory and Techniques in Organic Chemistry	Spring
CHEM 5210	Advanced Physical Chemistry I: Quantum Mechanics	Fall
CHEM 5220	Advanced Physical Chemistry II: Statistical Mechanics	Fall
CHEM 5224	Reaction Kinetics and Dynamics	Spring
CHEM 5250	Molecular Spectroscopy	Spring
CHEM 5260	Introduction to Astrochemistry	Fall
CHEM 5310	Advanced Inorganic Chemistry I: Reaction Mechanisms	Fall
CHEM 5320	Advanced Inorganic Chemistry II: Organometallics and Synthesis	Fall
CHEM 5330	Structural Inorganic Chemistry: Characterization and Spectroscopy	Spring
CHEM 5340	Nanomaterials: Synthesis, Properties, and Applications	Spring
CHEM 5350	Main Group Inorganic Chemistry	Fall
CHEM 5360	Materials Chemistry for Future Energy Needs	
CHEM 5380	Determination of Molecular Structure by Diffraction Methods	Spring
CHEM 5410	Advanced Biological Chemistry I: Molecular Assembly and Information Flow	Fall
CHEM 5420	Advanced Biological Chemistry II: Macromolecular Structure and Function	

CHEM 5430	Nanoscale Imaging of Complex Systems in Chemistry and Biology	Spring
CHEM 5440	Methods at the Interface of Chemistry and Biology	Fall
CHEM 5510	Selected Topics in Organic Chemistry (Drug Discovery)	
CHEM 5520	Selected Topics in Physical Chemistry	
CHEM 5530	Selected Topics in Inorganic Chemistry	
CHEM 5540	Selected Topics in Biological Chemistry (Drug Discovery)	Spring
CHEM 5559	New Course in Chemistry	
CHEM 5710	Adv. Analytical Chemistry (co-taught with CHEM 4090)	Fall
CHEM 5760	Bioanalytical Microsystems	Fall
CHEM 5720	Methods in Bioanalytical Chemistry	Spring
CHEM 5740	Analytical Chemistry: Separations	Fall
CHEM 7010	Research Seminar I: Introduction to Research	Fall
CHEM 7011	Teaching Science in Higher Education	Fall
CHEM 7020	Research Seminar II: Research, Innovation, Entrepreneurship, and Ethics	Spring
CHEM 7021	Communicating Research to Diverse Audiences	Spring
CHEM 7030	Research Seminar III: Preparation for Ph.D. Candidacy Exam	Fall
CHEM 7031	The Art of Scientific Writing	Fall

Below is a listing of graduate level courses that are offered outside the Chemistry Department and can be taken to fulfill the graduate course requirements. Additional outside courses can be added to this list by petition to the Graduate Studies Committee that the course provides Ph.D.-level knowledge that is essential to the student's research progress.

### **ASTRONOMY**

ASTR 5010 Astrophysical Processes  
 ASTR 5340 Introductory Radio Astronomy  
 ASTR 5420 Interstellar Medium  
 ASTR 5430 Stellar Astrophysics

### **BIOLOGY**

BIOL 5070 Practical Aspects Light Microscopy in the Biological Sciences  
 BIOL 7320 Signal Transduction: How Cells Talk to Each Other  
 BIOL 7360 Cytokine Signaling

### **BIOPHYSICS**

BIOP 8020\* Structural Biology (crystallography and cryo EM)  
 BIOP 8050\* Cellular Biophysics (Fluorescence imaging and spectroscopy, AFM, optical tweezers)  
 BIOP 8030/31 Magnetic Resonance Spectroscopy of Macromolecules (parts I and II, each 2 units)  
 BIOP 8130/31 Biological Membranes and Membrane Proteins (parts I and II, each 2 units)

\* BIOP 8020 and 8050 are each two credits and may be taken in sequence



## **BIOMEDICAL ENGINEERING**

BME 6101 Engineering Physiology 1  
BME 6102 Engineering Physiology 2  
BME 6310 Instrumentation and Measurement in Medicine I  
BME 7641 Bioelectricity  
BME 7806 Biomedical Application of Genetic Engineering  
BME 8783 Advanced Magnetic Resonance Imaging

## **BIOMEDICAL SCIENCE**

BIMS 5012 Cell Structure Function  
BIMS 7100 Research Ethics  
BIMS 8131 Topics in Molecular Basis of Human Disease  
BIMS 8192 Biotechnology Research Seminar  
BIMS 8200 Fundamental Immunology  
BIMS 8380 Practical Use of Statistics in Biomedical Research

## **CHEMICAL ENGINEERING**

CHE 5561 Special Topics in Chemical Engineering (e.g., Computational Chemistry in ChE)  
CHE 5562 Special Topics in Chemical Engineering (e.g., Energy Science and Engineering)  
CHE 6030 Green Engineering and Sustainability  
CHE 6442 Applied Surface Chemistry  
CHE 6447 Biochemical Engineering  
CHE 6448 Bioseparations Engineering  
CHE 6615 Advanced Thermodynamics  
CHE 6665 Techniques for Chemical Engineering Analysis and Design  
CHE 6561 Chemistry for Engineering Functional Materials

## **COMPUTER SCIENCE**

CS 6160 Theory of Computation  
CS 6161 Design and Analysis of Algorithms  
CS 6444 Introduction to Parallel Computing

## **EDUCATION**

EDLF 5260 Cognitive Psychology and Education  
EDLF 5330 Quantitative Methods and Data Analysis I  
EDLF 7404 Qualitative Analysis  
EDLF 7410 Mixed Methods Research Design

## **ELECTRICAL AND COMPUTER ENGINEERING**

ECE 5241 Optics and Lasers

## **ENGINEERING – APPLIED MATHEMATICS**

APMA 6150 Linear Algebra  
APMA 6430 Statistics for Engineers and Scientists  
APMA 6440 Applied Partial Differential Equations

## **ENVIRONMENTAL SCIENCES**

EVGE 5850 Geochemistry  
EVGE 5860 Isotope Geochemistry

## **MATERIALS SCIENCE AND ENGINEERING**

MSE 6010 Electronic and Crystal Structure of Materials  
MSE 6020 Defects and Microstructure in Materials  
MSE 6080 Chemical and Electrochemical Properties  
MSE 6120 Characterization of Materials  
MSE 6130 Transmission Electron Microscope  
MSE 6230 Thermodynamics and Phase Equilibria of Materials  
MSE 6270 Introduction to Atomistic Simulations  
MSE 6592 Topics in Materials Science  
MSE 6670 Electronic, Optical and Magnetic Properties of Materials  
MSE 7220 Surface Science  
MSE 7592 Advanced Topics in Materials Science

## **MECHANICAL AND AEROSPACE ENGINEERING**

MAE 6592 Introduction to Density Functional Theory (DFT) and Electronic Structure Calculations

## **MATH**

MATH 5210 Advanced Calculus with Applied Mathematics  
MATH 5220 Partial Differential Equations and Applied Mathematics  
MATH 5651 Advanced Linear Algebra

## **MICROBIOLOGY**

MICR 8401 Microbial Pathogenesis

## **MOLECULAR PHYSIOLOGY AND BIOLOGICAL PHYSICS**

PHY 5060 Molecular Physiology: From Molecular Machines to Biological Information Processing  
PHY 8130 Structure and Function of Biological Membranes

## **NEUROSCIENCE**

NESC 7030 Neurobiology

## **PHARMACOLOGY**

PHAR 9010 Human Pharmacology  
PHAR 9020 Molecular Characterization of Drug Targets  
PHAR 9080 Biochemical Pharmacology  
PHAR 9003\* Molecular Targets  
PHAR 9004\* Discovering Drugs

\* Two credit courses that are often taken as a sequence

## PHYSICS

PHYS 5190	Electronics Lab
PHYS 5310	Optics
PHYS 5320	Fundamentals of Photonics
PHYS 5620	Introduction to Solid State Physics
PHYS 5630	Computational Physics I
PHYS 5820	Introduction to Nanophysics
PHYS 7420	Electricity and Magnetism I
PHYS 7610	Quantum Theory I
PHYS 8260	Ultrafast Laser Spectroscopy
PHYS 8310	Statistical Mechanics

### C. Graduate Course Requirements

In the Graduate School, a minimum cumulative GPA of 3.0 (B average) must be maintained. The minimum passing course grade is B-. Students must successfully complete 18 credit hours of graded courses (which they typically do during the first year) by the end of their 2<sup>nd</sup> year. Students must also successfully complete 12 credit hours of professional development courses which are the 7010, 7011, 7020, 7021, 7030 and 7031. These professional development courses are not considered among the 18 credit hours of graded courses. Nevertheless, 7010 and 7020 do contribute 6 credit hours towards the graduate school degree requirement of accumulating 24 credit hours of coursework, but not to the 18 hours of required graded coursework. The area programs typically suggest several core courses that are foundational to the area whereupon other courses, both within the department and outside of it, are usually selected based on the particular research needs of the student. Grades in the relevant courses will be part of the evaluation process for admission to Ph.D. candidacy in February of the second year (i.e., the candidacy exam). Additional courses (i.e., beyond the 18-hour requirement) may be taken at any time with permission of the student's Research Advisor and the Director of Graduate Studies. Generally, first year students will enroll for 15 credit hours/semester and upper year students for 12 credit hours/semester. Representative courses for the first year of study are shown below:

#### Astrochemistry

##### Fall

5260 Introduction to Astrochemistry  
5210 Adv. PChem. I-Quantum Mech.  
7010\* Research Seminar I  
7011\* Teaching Science

##### Spring

5224 Kinetics and Dynamics  
5250 Molecular Spectroscopy  
7020\* Research Seminar II  
7021\* Communicating Research

\* Professional development courses required for all students

Electives in Fall and Spring are frequently chosen from the Astronomy department's offerings, such as ASTR 5010 Astrophysical Processes, ASTR 5340 Introductory Radio Astronomy, ASTR 5420 Interstellar Medium, or ASTR 5430 Stellar Astrophysics. CHEM 5220 Adv. PChem. II-Statistical Mechanics is another common choice. Depending on the type of research planned, the Materials Science class MSE 6270 Introduction to Atomistic Simulations may be useful. Note that the Astronomy department typically runs their courses on a two-year timetable, meaning that some classes may not be available in the first year. Some students choose to take an astronomy class in the fall of their second year if it is not otherwise available and conduct research in place of that class in the first year; this option should be discussed with the proposed research advisor. Some flexibility in Chemistry course choices is possible, depending on class availability and research direction.

### Bioanalytical Chemistry

<u>Fall</u>	<u>Spring</u>
5410 Adv. Biological Chem. I	5420 Adv. Biological Chem. II
5740 Analytical Chem: Separations	5720 Methods in Bioanalytical Chem.
5710 Adv. Analytical Chem	
Or 5760 Bioanalytical Microsystems	
7010* Research Seminar I	7020* Research Seminar II
7011* Teaching Science	7021* Communicating Research

\* Professional development courses required for all students

# Currently, CHEM 5710 is co-taught with undergraduate Analytical (CHEM 4090), and enrollment at the graduate level requires instructor permission. Students should enroll in CHEM 5710 if they are interested in learning analytical chemistry and they have not previously mastered undergraduate coursework in this topic. Contact the instructor to discuss if you are not sure.

Other courses, such as 5180 Instrumentation for Synthesis, 5430 Nanoscale Imaging, 5250 Molecular Spectroscopy, 5380 Molecular Structure by Diffraction, 5440 Methods at the Interface of Chemistry and Biology, MSE 6130 Electron Microscopy, PHYS 5190 Electronic Lab, APMA 6430 Statistics for Scientists, CS 6014 Computing for Scientists, BME 6101/2 Engineering Physiology, CHE 6561 Chemistry for Engineering Functional Soft Materials, etc., or enrollment in some hours of CHEM 9999 Doctoral Research (typically 2 hours in the Fall), or CHEM 9xxx Topical Research once a research advisor has been established, are often chosen to round out the first year.

### Chemical Biology

<u>Fall</u>	<u>Spring</u>
5410 Adv. Biological Chem. I	5420 Adv. Biological Chem. II

5110 Organic Chemistry III Biology	5440 Drug Discovery/Chemical Biology
5440 Methods in Chemical Biology	5120 Organic Chemistry IV
7010* Research Seminar I	7020* Research Seminar II
7011* Teaching Science	7021* Communicating Research

\* Professional development courses required for all students

Other courses, such as 5430 Nanoscale Imaging, 5720 Methods in Bioanalytical Chem., 5730/40 Adv. Analytical Chem., 5250 Molecular Spectroscopy, BIOP 5060 Molecular Physiology, CS 6014 Computing for Scientists, MSE 6130 Electron Microscopy, etc., or enrollment in some hours of CHEM 9999 Doctoral Research (typically 2 hours in the Fall), or CHEM 9xxx Topical Research once a research advisor has been established, are often chosen to round out the first year. Completion of the required 18 hours of graded courses may occur in the second year (first semester) for scheduling reasons.

### Chemical Education

<u>Fall</u>	<u>Spring</u>
EDLF 5330 Quant. Methods & Data Anal.	CHEM XXXX course #2
CHEM XXX course #1	CHEM XXXX course #3
EDLF 7404 Qualitative Analysis Education	EDLF 5260 Cognitive Psych. & Education
7010* Research Seminar I	7020* Research Seminar II
7011* Teaching Science	7021* Communicating Research

\* Professional development courses required for all students

In a typical first year, students interested in Chemical Education are advised to take three education courses (EDLF) and three chemistry courses (listed as XXX Chem Course #x above). Chemistry courses should be focused in an area of interest, and course selection can be advised from the lists for sub-disciplines above. In addition, it is recommended in year 2 to take an additional chemistry graduate course as well as EDLF 7410 (Mixed Methods Research Design), which has been taught in the Fall semesters. During the second year, CHEM 7030/7031 are required in the fall. Enrollment in some hours of CHEM 9999 Doctoral Research (typically 2 hours in the Fall), or CHEM 9xxx Topical Research (once a research advisor has been selected) may be chosen during the first year.

### Physical Chemistry

<u>Fall</u>	<u>Spring</u>
5210 Adv. PChem. I-Quantum Mech.	5224 Kinetics and Dynamics
5220 Adv. PChem. II-Statistical Mech.	5250 Molecular Spectroscopy
7010* Research Seminar I	7020* Research Seminar II
7011* Teaching Science	7021* Communicating Research

\* Professional development courses required for all students

Other courses, such as 5260 Intro. to Astrochem., 5730/40 Adv. Analytical Chem., 5410/20 Adv. Biological Chem., 5430 Nanoscale Imaging, PHYS 5310 Optics, PHYS 5620 Solid State Physics, MSE 6670 Electronic, Optical, and Magnetic Properties of Materials, MSE 6270 Introduction to Atomistic Simulations, PHYS 5630, Computational Physics I, etc., or enrollment in some hours of CHEM 9999 Doctoral Research (typically 2 hours in the Fall), or CHEM 9xxx Topical Research once a research advisor has been established, are often chosen to round out the first year. If a student has already taken a graduate-level quantum or statistical mechanics in chemistry, they may consider taking the physics versions of these courses. Students should consult with potential research advisors prior to finalizing courses whenever possible.

### **Biophysical**

#### Fall

5410 Adv. Biological Chem I  
5220 Adv. Phys. Chem II- Stat. Mech.

7010\* Research Seminar I  
7011\* Teaching Science

#### Spring

5420 Adv. Biological Chem II  
8201/8301 Biophysical Principles  
I&II

7020\* Research Seminar II  
7021\* Communicating Research

\* Professional development courses required for all students

Electives for the Fall semester include but are not limited to: ECE 6782 (Digital Image Processing), PHYS 5310 (Optics), CHEM 5310 (Adv. Phys. Chem I–Quantum), CHEM 5730 (Adv. Anal. Chem.), CHEM 5440 (Methods at the interface of chemistry and biology), BME 6310 Computational Modeling in Biomedical Engineering, BIOP 8130/8131 (Biological Membranes), BIOP 8030/8031 (Magnetic Resonance), BIOP 8020 (Structural Biology), BIOP 8050 (Cellular Biophysics), PHYS 5250 (Mathematical Methods for Physicists). Electives for the spring include CHEM 5430 (Nanoscale Imaging). During the second year, CHEM 7030/7031 are required in the fall, and your advisor may recommend additional courses for either the fall and/or the spring semesters. Enrollment in some hours of CHEM 9999 Doctoral Research (typically 2 hours in the Fall), or CHEM 9xxx Topical Research (once a research advisor has been selected) may be chosen during the first year.

### **Synthesis – Inorganic Focus**

#### Fall

5310 Adv. Inorganic Chem. I  
5320 Adv. Inorganic Chem. II  
5350 Main Group Chem.

#### Spring

5180 Instrumentation for Synthesis  
5330 Structural Inorganic Chemistry  
5340 Nanomaterials OR 5380  
Determination of Molecular Structure

7010\* Research Seminar I  
7011\* Teaching Science

7020\* Research Seminar II  
7021\* Communicating Research

\* Professional development courses required for all students

Other courses, such as 5110 Organic Chem. III; 5120 Organic Chem. IV; 5410/20 Adv. Biological Chem. I and II; 5440 Methods and the Interface of Chemistry and Biology; 5540 Special Topics in Biological Chemistry: Drug Discovery; 5730/40 Adv. Analytical Chem.; 5224 Reaction Kinetics and Dynamics, etc., or enrollment in some hours of CHEM 9999 Doctoral Research (typically 2 hours in the Fall), or CHEM 9xxx Topical Research once a research advisor has been established, are often chosen to round out the first year.

### **Synthesis – Organic Focus**

#### Fall

5110 Organic Chem. III  
5320 Adv. Inorganic Chem. II  
5310 Adv. Inorganic Chem. I OR  
5350 Main Group Chem

7010\* Research Seminar I  
7011\* Teaching Science

#### Spring

5120 Organic Chem. IV  
5180 Instrumentation for Synthesis  
5330 Structural Inorganic Chemistry OR  
5380 Determination of Molecular  
Structure OR 5540 Drug Discovery

7020\* Research Seminar II  
7021\* Communicating Research

\* Professional development courses required for all students

Other courses, such as 5410/20 Adv. Biological Chem., 5440 Methods at the Interface of Chemistry and Biology, 5730/40 Adv. Analytical Chem., 5224 Reaction Kinetics and Dynamics, etc., or enrollment in some hours of CHEM 9999 Doctoral Research (typically 2 hours in the Fall), or CHEM 9xxx Topical Research once a research advisor has been established, are often chosen to round out the first year.

### **Additional Degree Requirements**

Each first-year graduate student must submit a request for a faculty research adviser to the Graduate Committee by November 15 if they started in the fall semester or by April 15 if they started in the spring semester. The Graduate Studies Committee will consider all adviser selections. No selections are final until the Graduate Studies Committee has approved them. Barring extenuating circumstances, all approvals will be made before November 28 or April 25 (for students entering in fall and spring, respectively).

In consultation with his or her Research Advisor, each student must submit a list of potential advisory committee members on the Advisory Committee Form to the Graduate Studies Coordinator by March 15 (for students who started in the fall) or May 2 (for students who entered in the spring). After approval by

the Graduate Studies Committee, this group will become the student's primary advisory group.

## **II. One-year non-thesis Master's of Science (M.S.) Degree**

### **Description**

The self-financed non-thesis Master's program is designed for students wanting an advanced degree based primarily on coursework. The program provides a path to industrial jobs, professional schools, teaching careers, Ph.D. programs, or it can be used as part of an interdisciplinary career portfolio. The program, usually comprised of ten graduate courses in Chemistry or related disciplines, is normally completed in one academic year. For international students, important parallel components of the non-thesis Master's program are activities and classes designed to improve English fluency provided through the Center for American English Language and Culture (CAELC). These courses are optional for international non-thesis M.S. students. Further non-thesis Master's program details are available at <https://chemistry.as.virginia.edu/non-thesis-master's-program-1-year>.

### **Registration**

Students pursuing the one-year non-thesis Master's should enroll in graded and/or research courses for a total of 15 credit hours each semester. To receive the non-thesis Master's, six total credits (three each semester) must be research (CHEM 8999).

- A. Total course credit accumulation of at least 30 credit hours comprised of least 24 credit hours of successfully completed graduate courses (18 hours of graded coursework) in Chemistry or related fields with at least a B cumulative average (3.0 GPA). The minimum passing grade in any graduate course is B-. Both graded lecture and research coursework can provide credit hours towards the non-thesis Master's degree.

### **Policy on TA Employment for Students in the non-thesis M.S Program**

For students who have completed their undergraduate degree at UVA, a limited number of TA opportunities could be available, on a case-by-case basis, for students in the Department of Chemistry's non-thesis M.S. Program under the following conditions:

- Students may only be employed on an hourly wage basis, at the customary wage for undergraduate students (currently \$11.00/hour).
- Students may only hold these TA positions for work in courses which they completed during their undergraduate years at the University of Virginia.
- Employment of such students will be entirely at the discretion of the course instructor and the faculty member overseeing TA assignments (currently Prof. Charlie Grisham).
- Students in the non-thesis M.S. Program may not work more than 20 hours per week.
- Students may only serve as TAs for a maximum of two courses per semester and the combined hours worked for such courses may not exceed 20 hours per week.

## **III. Requirements for thesis Master's of Science (M.S.) Degree**



- A. Successful completion of the core degree requirements and 7010 and 7020 with course grades of B<sup>-</sup> or better.
- B. Total course credit accumulation of at least 30 credit hours (comprised of at least 24 credit hours of coursework) with at least a B cumulative average (3.0 GPA).
- C. Completion of a research project and written thesis that must be approved by the student's Advisory Committee.
- D. Successful oral presentation of the thesis work in a seminar to faculty and students.
- E. Satisfactory performance in an oral examination following the thesis seminar.
- F. It is expected that students in this program will complete these requirements not later than their third year in residence.
- G. Failing these requirements, the student may be eligible for the non-thesis Master's degree.

#### **IV. Requirements for the Doctor of Philosophy (Ph.D.) in Chemistry**

- A. Successful completion of the core degree requirements and 7010, 7011, 7020, 7021, 7030 and 7031 with grades of B<sup>-</sup> or better.
- B. Total course credit accumulation of at least 72 credit hours (comprised of at least 24 credit hours of coursework) with at least a B cumulative average (3.0 GPA). For students who have transferred some graduate credit hours from another institution, at least 18 graded course credits applied toward the degree must have been earned at UVA.
- C. Successful completion of the Candidacy Examination that is described in detail below.
- D. Presentation of research in the third-year poster session.
- E. Completion of a research seminar (public) in the 4<sup>th</sup> year as well as a discussion of the student's plan for thesis completion with the research advisory committee
- F. Completion of a written dissertation that describes the research and presents results suitable for publication in the scientific literature. The dissertation must be approved by a Doctoral Dissertation Committee minimally comprised of:
  - 1. The student's Research Advisor and at least 2 members of the student's Research Advisory Committee. Emeritus faculty are

eligible to participate in the core membership of the Committee. A faculty member external to the University, who holds a Ph.D., can be approved as part of the core Examining Committee if the Director of Graduate Studies can successfully petition the GSAS Assistant Dean of the rationale for the appointment and the alternate credentials and experience that qualify that faculty member to serve on the doctoral committee.

2. A UVA tenured or tenure-track faculty member from outside the Chemistry Department.
- G. Successful oral presentation of the dissertation work in a seminar to faculty and students.
  - H. Successful oral defense of the dissertation to the Doctoral Dissertation Committee.
  - I. It is expected that these requirements will be satisfied before the end of the student's fifth year in residence. Extensions beyond five years may be granted with approval of the research advisor, the Graduate Studies Committee and the Graduate School.
  - J. Failure to satisfy these requirements will preclude readmission to the Chemistry Department Doctoral Program. In such cases the student may be eligible for the non-thesis M.S. or thesis M.S. degree.

## V. Supplementary Explanations

### A. Selection of a Research Advisor

Upon arrival at UVA, new Ph.D. students will be assigned a desk in a research lab in their general area of interest (if space is available). Entering students are not assigned a research group, even if they have performed research over the previous summer. **Assignments to research groups are never final until the Graduate Studies Committee meets and makes decisions in November.** Students are encouraged to consider possible research groups as soon as the semester begins. This process involves attending faculty research presentations (CHEM 7010). In September, all research active faculty will give 10-minute overviews of their research group followed by a 5-minute question and answer period. New graduate students should schedule a minimum of three individual appointments with faculty of interest. In addition, all new graduate students should complete a minimum of three 2-week rotations. Performing experiments during rotations is not an expectation, but students should attend at least one group meeting per week and perform one shadowing per week during the rotations. In addition, it is recommended that new students talk with students who are in research groups of interest. Also, students are encouraged to explore these opportunities across

multiple research groups as they work towards making an informed rank-ordered selection of which research advisors they would most like to work with by mid-November. Additional details are provided below:

### **1. Research Orientation Seminars**

During the early part of the fall semester, an Orientation Seminar Series will be scheduled within CHEM 7010. At these seminars, faculty members available to assume the role of Research Advisor will present brief (10 minutes) overviews of their research programs followed by a question and answer session (5 minutes). All entering students are required to enroll in CHEM 7010 and attend this seminar series, unless the Director of Graduate Studies provides an exemption. It is the purpose of this series to expose new students to research opportunities available in the Chemistry Department. It is expected that students will use this introduction to research as a basis for the selection of several research groups for more in-depth exploration as well as their lab rotations.

### **2. Faculty Interviews**

Each student will arrange meetings with individual faculty members whose research activities appear attractive for thesis work. These meetings are opportunities to explore in greater depth the problems to be tackled and to gain a sense of the possible working relationship with a particular program and faculty member. Each student is required to meet with at least three faculty members, but there is no upper limit on the number of such discussions. A form towards the back of this Handbook is provided to document these faculty discussions. The faculty interviews are documented on a form provided by the Graduate Studies Coordinator, which must be submitted by early November.

### **3. Lab Rotations**

Each student will select and perform three 2-week lab rotations. The rotations are made in consultation with the faculty member, but they must be documented in a process to be outlined in CHEM 7010. Each rotation requires attendance at the group meeting as well as at least one shadowing experience *per week*. Rotations longer than two weeks are permitted. The shadowing experience should involve significant time observing laboratory experiments with a current graduate student(s) or postdoc(s).

### **4. Selection Process**

By mid-November, students will indicate their first, second and third choices for research advisor on the Research Advisor Selection form. Because of space and support limitations, some first-choice selections may not be available. In that case, the Graduate Studies Committee, in consultation with faculty members and the student, will assign another choice.

All students must return the completed selection form to the Graduate Coordinator, Sage Bradburn (Room 188), on or before November 15. For

students beginning in January, the due date is April 15. The Graduate Studies Committee will meet to review these selections for the entire class. **No research advisor selections are final until the Graduate Studies Committee has approved them.**

Except in cases of faculty overload or financial problems, the Graduate Studies Committee will approve the student's first choice of research advisor. Should some complication arise, the Graduate Studies Committee will resolve it as rapidly as possible in full consultation with both the faculty and student involved. The Graduate Studies Committee will not assign a student to a research advisor other than his or her first choice or his or her alternate choice without full consultation with the student.

### **5. Selection of a Research Advisory Committee**

After selection of a research advisor has been made, and before the summer of the first year, students are expected to assemble a three-member Research Advisory Committee. This is complete when the student submits the Research Advisory Committee selection form. As with Research Advisor assignment, Research Advisory Committees are not final until the Graduate Studies Committee gives approval. In order to maintain some balance to faculty assignments, students do not always get their advisor committee selections. Prior to defense of the Ph.D. thesis, a fourth committee member must be selected from outside the department. This outside faculty member will receive a copy of the Ph.D. thesis and will be present at the Ph.D. thesis seminar and the oral examination.

## **B. Annual Review of Research Progress**

All Ph.D. graduate students in the Chemistry Department will submit an annual progress report. The progress report will require completion of the departmental Individual Development Plan (IDP) template. The IDP template is available from the Graduate Studies Coordinator. After submission of your first annual report, subsequent annual progress reports are based on updating the IDP. Below is the process for completion of the annual report:

A. By July 1 of each year (note: the actual deadline each year could be adjusted), the student updates her/his IDP and submits the document to her/his research advisor. A meeting is scheduled between the student and research advisor to overview the document. The student will update the IDP based on discussion with her/his research advisor. The IDP should be signed by the student and research advisor (first page) indicating that a meeting was held. Thus, the reporting process provides an annual opportunity for graduate students and research advisors to broadly discuss progress toward degree, including progress on research project(s), and professional development goals and opportunities. Electronic signatures on the IDP are acceptable. Please note that the initial sections of the IDP are focused on research progress. These sections

should be completed in sufficient details that individuals outside of the student's research group, such as members of the student's advisory committee, can clearly understand the goals, progress, etc.

B. A PDF of the completed IDP is submitted to the graduate coordinator (by email) by August 1 with a copy to the student's research advisor and research advisory committee members. Students can request to meet with advisory committee members to discuss aspects of their IDP, but such meetings are not a requirement.

### **C. Ph.D. Candidacy Examination**

NOTE: Previous non-thesis M.S. students who transition into the Ph.D. program have the option to take the candidacy exam during their 4th semester (including the two semesters in the non-thesis M.S. program) or to defer until their 6th semester (again, including the two semesters in the non-thesis M.S. program).

#### **1. General Considerations**

The examination consists of two nearly equal parts based on submitted written materials, oral presentations, and discussion with the student's Research Advisory Committee and other faculty. The first part is concerned with the candidate's thesis research, and the second part is based on the candidate's critique of an assigned journal article. Assessment of the oral components of the two parts of the examination will be made consecutively. Each part will begin with a ten-minute presentation followed by a twenty-five minute question and answer period. The questions will be related to, but not confined to, the topic of the presentation. There will be a ten-minute intermission between the first and second parts of the examination.

In part one of the examination, the student will provide an overview of his or her current research problem, including a testable hypothesis, the relationship of the project to related work of others, and a summary of progress to date. The presentation should include plans for future work and possible extensions, should the goals be achieved.

The written thesis research overview must be submitted to the Graduate Studies Coordinator two weeks before the start of the examination period. In a font size no smaller than ten point and no more than ten double-spaced pages in length. Please note that the 5- and 10-page limits, for the literature critique and research report (respectively), do not include graphics or references. The research document will include an introduction, a summary of results to date, plans for future studies, and a statement of possible long-term implications. The format and style will be consistent with that used by major ACS journals in the candidate's field of study. The references should include article titles. Detailed experimental procedures and other supporting information should be included in an appendix. Material in the appendix should be illustrative and supportive, but not essential to the overall

understanding of the project. The report should be organized along the following lines with typical, but no mandatory, lengths provided:

1. Introduction (1-3 pages)
2. Progress to Date (6-7 pages)
3. Plans for Future Work (1-2 pages)
4. Appendix (experimental procedures, display of data, schematic drawings of equipment, and other supporting information)

In part two of the examination, the student will critique an assigned journal article related to his or her area of research. Approximately one month before the scheduled exam the student will be assigned a recent publication related to his or her major area of research. This assignment will be made by the research advisor. After a thorough study of the assigned publication and relevant references, the student will prepare a summary and critique of the publication. Points to address are:

1. Purpose of the described research
2. Methods and techniques that were used
3. Conclusions of the authors
4. Critical evaluation of the approach used by the authors and their conclusions
5. Likely impact of the findings on future studies in the area of the research
6. Possible novel extensions of the findings

It is expected that critical statements that support or challenge the reported research will be supported by appropriate literature citations. The written summary and critique should be double-spaced and no more than five pages in length (not counting the reference list).

The oral presentation should provide an overview of the student's critique of the assigned paper in anticipation that the subsequent faculty question period can probe particular issues in greater depth.

## **2. Further Ph.D. Candidacy Exam Details**

- a. All students who plan to take the candidacy examination will register for CHEM 7030 and CHEM 7031 in the Fall semester prior to their candidacy examination. In this course, the instructor will work with students to assist their preparation for the exam. Topics to be covered include the organization of the essential features of the progress report and the character of the oral examination question and answer session. Students will be asked to make oral presentations to the class on various topics within their chosen area and to write short summaries of published work.

- b. All students will electronically submit the thesis research overview component of the candidacy examination to the Graduate Studies Coordinator two weeks in advance of the *first day* of candidacy exams. The publication critique should be electronically submitted one week in advance of the *first day* of candidacy exams.
- c. The Research Advisory Committee will pose the first round of questions to the student. Subsequently, any faculty member present may ask questions.
- d. After all students have completed their candidacy exams, the faculty will meet to discuss student performances and recommend Ph.D. candidacy actions. Available to the assembled faculty will be student transcripts, research advisor assessments of student progress, and individual faculty assessments of both the written and oral components of the Ph.D. candidacy examinations. The overall faculty recommendations will be pass with distinction (high pass), pass, conditional pass, or fail.
- e. If the faculty recommends conditional pass, remedial action to be completed (generally by April 15) will be outlined by the committee. The remedial work may take the form of a revised research summary or article critique or other actions, depending on the individual case. After completion of the remedial work, a final (pass/fail) decision will be made.
- f. Students who fail the candidacy examination will not be advanced to candidacy in the Ph.D. program but will be permitted to complete a master's degree. In such cases the student may:
  - 1. Terminate with a non-thesis M.S. degree by May of that year\* or,
  - 2. Write and successfully defend an M.S. thesis by August of that year<sup>†</sup>.
- g. A student who selects the thesis M.S. degree option may, with the permission of the research advisor, re-apply for admission to candidacy. In such cases a thesis defense and examination will be held following the oral presentation of the thesis results. This examination will take place with the Research Advisory Committee. If the thesis and defense are deemed acceptable by the Committee, and the student is judged to have passed the oral examination, admission to the Ph.D. program can be recommended.
- h. Faculty participation in candidacy exam

Note: This policy applies to tenure track and non-tenure track faculty.

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\* These deadlines will be strictly enforced. Extensions will be granted only under special circumstances by petition from the student and research advisor to the Graduate Studies Committee.

Research advisors and research committee members (and faculty members in general) can and are expected to participate in some aspects of graduate student preparation for the candidacy exam. Below, we outline parameters for faculty (and graduate student/postdoc) participation.

**Preparation of documents for the candidacy exam: No faculty participation.** It is expected that faculty members will *not* directly participate in the preparation of materials for the candidacy exam. This includes the preparation of slides for oral presentations (research and literature critique) as well as written documents (research and literature critique).

**Input on fundamental understanding of concepts: faculty participation allowed.** Faculty members, including research advisors, can discuss and provide guidance that augments student understanding of topics related to their research and literature critiques. Thus, it is appropriate for students to ask and receive guidance on conceptual questions related to their literature assignments or their research project any time prior to the candidacy exam. In addition, faculty members are encouraged to participate in activities that provide practice Q&A for graduate students as well as to offer feedback on student responses.

**CHEM 7030: research advisor participation allowed and encouraged.** CHEM 7030 is the course for students to practice *oral* presentations. Research advisors are strongly encouraged to participate in CHEM 7030 including Q&A sessions with their students during CHEM 7030. In addition, research advisors are encouraged to provide feedback and guidance to their students following oral presentations in CHEM 7030.

**CHEM 7031: No faculty member participation.** CHEM 7031 is the course for students to focus on preparation of *written* documents for the candidacy exam. It is expected that faculty members will *not* directly participate in the preparation of written documents for CHEM 7031 since the research document can be directly used to build the candidacy exam document.

**Graduate student and postdoc participation: allowed and encouraged.** Graduate students and postdocs can (and are encouraged) to participate in all aspects of graduate student preparation for the candidacy exam, including critiquing and providing direct feedback on slides for oral presentation and written documents.

i. Notes about preparation of graphics: original vs. not original

Following are comments that seek to provide clarify on the generation and use of graphics for the candidacy exam documents. If you use a graphic that has been generated by someone else in the candidacy exam documents, you should credit the source. Some examples are given below:



1. Use of a graphic from a published work: In the caption for the graphic (figure, scheme, chart, etc.) the original source should be cited. Also, in the text where the graphic is referenced, the original source should be cited.

2. Use of an unpublished graphic generated by another researcher (commonly in the same group): In the caption for the graphic (figure, scheme, chart, etc.) the original source (student, postdoc, etc.) should be noted. For example, you could include the following: Note: The graphic used in Figure 3 was generated by XXX.

3. Use of an unpublished graphic that is commonly used by your group, but the original source is unknown: In the caption for the graphic (figure, scheme, chart, etc.) the nature of the graphic as a “group template” should be noted. For example, you could include the following: Note: The graphic used in Figure 3 is a commonly shared and use group graphic.

#### **D. Third Year Poster Session**

In the spring of the third year, students will present their research in a departmental poster session. A written one-page abstract will be electronically submitted to the Graduate Studies Coordinator one week before the presentation. These abstracts will be assembled into a booklet for distribution prior to the poster session.

#### **E. Ph.D. Completion Within 5 Years**

By the end of the spring semester of the fifth year in residence, students will complete their Ph.D. dissertation defense. If it is anticipated that the Ph.D. cannot be completed at the end of 5 years and additional financial support is desired, the student must supply an explanation for the delay, a timeline for completion and a CV to the Graduate Studies Direction along with a supporting letter from their advisor. Under some circumstances, additional time to complete the thesis and defense can be granted, but this must be approved by the Director of Graduate Studies and the Graduate School. The Graduate School of Arts and Sciences limits residency in any Ph.D. program to seven years. **In cases where a student successfully petitions to continue beyond five years, a meeting of the students' Research Advisory Committee is required before start of the sixth year.** The outcome of this meeting will be an agreed upon timeline for completion of degree, to include a written summary with specific milestones to be achieved by specific dates.

#### **F. Internships**

Graduate students in our program are encouraged to consider and pursue internship or externship opportunities that will enhance their education, training, and professional development (note: herein, internship will be broadly used to encompass on-Grounds or off-Grounds programs). Often, these opportunities will be pursued through the PhD+ program. If a student becomes interested in an internship, she/he should discuss this at an early stage with the

research advisor. This discussion should include consideration of duration of the internship, total time commitment, and other factors that might impact progress of the student's thesis research. The student's research advisor must approve the internship prior to the students' participation. If a research advisor does not approve an internship, the student can appeal the decision to the Director of Graduate Studies (DGS). In this case, the DGS will consult with the Graduate Studies Committee, the student, and the research advisor to reach a decision. When an internship provides financial support in exchange for effort, the general protocol will be for the students' departmental support (e.g., a GRA) to be reduced by an equivalent amount. Thus, financial support is considered distinct from other external funding, such as a merit-based fellowship based on the student's research progress, which often will enhance a student's financial support package. This standard approach to internships reflects the expected decrease in effort toward research-related activities as a result of the internship. Students and/or research advisors can petition for the financial support from an internship to increase a student's financial support, but there must be a case that the internship will not reduce hours toward the student's supported research effort. Adjustment in departmental support for unpaid internships will be handled on a case-by-case basis. In some cases, no adjustment will be necessary, while in other cases, for example a full-time internship, departmental support could be discontinued during the internship. For these situations, a decision will be made by the research advisor, DGS and the Chemistry Department Business Office.

**G. Fourth-year Seminar Requirement**

All Ph.D. students must deliver a research seminar by the end of their fourth year in the program. Completion of the requirement will involve a public seminar, generally expected to be approximately 30 to 40 minutes followed by a public question and answer session. The Q&A session will be similar to that of a typical research seminar in our department. The chair of the student's advisory committee will serve as the seminar host and provide a brief introduction and lead the public Q&A session.

Following the public Q&A session, there will be a non-public meeting between the student and the student's advisory committee. For the non-public committee meeting, building on their research seminar the student will provide an outline using slide(s) for her/his final thesis and provide a brief overview with expected timeframe to complete all thesis research and hold a defense. This presentation will serve as the foundation for a discussion that will focus on steps to complete graduation and any concerns about progress and meeting goals and timeline.

Following the committee meeting, the committee chair will use the discussion to complete a brief form indicating that a) the student has completed the seminar requirement, b) if, based on the committee/student discussion, the student is *likely* or not to complete and defend their thesis by the end of their 5th year,

and c) any relevant comments about student progress toward degree completion.

Students will have the option to schedule their seminar in either the fall or spring semester. The student has the responsibility of scheduling a date that committee members can attend, securing a room reservation (the Graduate Program Assistant can assist with this), and notifying committee members of the details. **Generally, by late September students are required to set the date and room for their seminar and notify the Graduate Program Assistant and committee members (consult the calendar for more details).**

#### H. Guidelines for Students Scheduling a Dissertation/Thesis Defense

1. The student will meet with his/her advisor to determine an appropriate defense date and to choose an outside faculty member to serve on his/her Doctoral Examining Committee (typically composed of the faculty advisor, the 3-member Research Advisory Committee plus one tenured or tenure-track UVA faculty expert from outside the Department). The Graduate School requires the Ph.D. examining committee, under the chair of the major advisory professor, **will consist of not fewer than four members from the graduate faculty**, one of whom must be from another department. The examining committee for the Master's degree should be conducted **by at least two faculty members designated by the department** in which the candidate is working. Below is a "decision tree" for final committee make-up:

A. Does the committee must have a minimum of four tenured or tenure-track members of the faculty of the Graduate School of Arts and Sciences?

B. One of the four required members of the committee can be from outside of UVA if: a. she/he has a Ph.D., b) and with approval from the Associate Dean (Tracy Mourton). Approval occurs by submission, by the Director of Graduate Studies, of the individual's CV and statement about her/his expertise and suitability to serve on the committee. If a student wishes to have a non-UVA faculty member on her/his committee, the students should submit a request to the Director of Graduate Studies (Chemistry) the individual's CV and a statement on expertise. **An individual from outside UVA CANNOT serve as the GSAS representative (see item #3).**

C. Is there a GSAS representative who has a primary appointment outside of the student's department but within Arts and Sciences? If the GSAS representative is outside of Arts & Sciences (e.g., one of the engineering or medical programs), it **MUST** be approved by the Director of Graduate Studies. When requesting approval, please indicate in the request if the individual has served on previous thesis committees for a student(s) within the College of Arts and Sciences. If not, the selection must be approved by GSAS, and this approval is requested by the Director of Graduate Studies.

D. Once these minimum requirements have been met, additional committee members from within the University or other institutions may be added.

2. At least two weeks prior to a scheduled defense the student will distribute one copy of the completed dissertation/thesis to each member of her or his examining committee.
3. During the ensuing two weeks, the committee will evaluate the scientific merit of the research and the format and style of the dissertation/thesis document.
4. Before the scheduled defense, the student will be informed if there are any major issues with the dissertation/thesis that prevents the defense from occurring. In this case, the student will be given instructions regarding the manner in which the issues are to be addressed. If no serious problems are identified, the defense will take place as scheduled. The committee might identify further changes to the thesis that are required prior to graduation.
5. Following a successful defense, including addressing any issues in the thesis, it will be the joint responsibility of the student and the research advisor to submit a final dissertation/thesis to the University that incorporates further committee recommendations. Approval of the M.S. or Ph.D. degree will only be given upon successful performance of these exercises.

**I. Graduate Studies Committee: Opportunities for Communication**

The Graduate Studies Committee is comprised of the Director of Graduate Studies and other faculty members. The Graduate Studies Committee considers, implements, and oversees policies and procedures related to the graduate program. The President of the Graduate Student Council is a member of the Graduate Studies Committee, and, as a result, is in a position to represent the graduate students in discussions on policies and initiatives related to the graduate program. In addition, the Director of Graduate Studies holds monthly meetings with officers of the Graduate Student Council. Thus, the Graduate Student Council provides one pathway by which graduate students can communicate with the Director of Graduate Studies and the Graduate Studies Committee. Graduate students are encouraged to actively participate in meetings of the Graduate Student Council, including raising concerns, issues, or discussion topics that the Graduate Student Council can communicate.

**J. Competitive Fellowships and Awards**

The Chemistry Department and external entities offer competitive fellowships that recognize excellence. One role of the Graduate Studies

Committee is to oversee the selection processes for these fellowships and other recognitions. For these opportunities, the Graduate Studies Committee will disseminate information including details of application materials and be responsible for decisions on selection of award recipients or nominees for external recognition.

**K. PhD+ and Opportunities**

UVA has implemented the PhD Plus (PhD+) program to augment professional development opportunities for graduate students and postdocs. From the PhD+ website, "PhD Plus is a university-wide initiative to prepare PhD students and Postdoctoral scholars across all disciplines for long-term career success. Our goal is to enable versatile academics who are deeply engaged with society's needs to become influential professionals in every sector and field." This program provides substantial and broad opportunities, and graduate students in chemistry are strongly encouraged to become engaged and informed about the program early in their career. More information can be found at:

<https://phdplus.virginia.edu>

The American Chemical Society has implemented a program, the ACS Institute, to provide diverse opportunities for chemists. These programs span free programs to paid training opportunities. From the ACS Institute website, "The ACS Institute is a learning platform offering a robust collection of learning and training resources to advance the chemistry community." More information can be found at the following link: [ACS Institute](#)

**L. Exit Requirements**

Research students who leave the University following completion of degree requirements or for any other reason are responsible for proper cleanup of their working area. This includes benches, desks, and fume hoods, where applicable. Research samples and notebooks should be properly labeled and stored and all chemicals that are no longer needed must be disposed of properly. Your research advisor should be consulted during this process. Prior to graduation each student and his/her advisor must sign the "Graduation Safety Release Form" (available towards the end of this Handbook) confirming adherence to these requirements. Finally, please complete the "Departure Form" (available towards the end of this Handbook) and an exit interview with Graduate Coordinator.

**M. University Degree Requirements**

Department program requirements must be satisfied in addition to, but do not supersede, the University requirements for graduate degrees, as stated in the current [Graduate Record](#).

## CHECK LIST FOR PREPARATION OF DEFENSE

Note: Please refer to deadlines on the calendar at the start of this document.

1. See GSAS guidelines at: <http://graduate.as.virginia.edu/thesis-submission-and-graduation> and follow the six steps to graduation listed on that page.
2. Consult with your research advisor for selection of a UVA faculty member, outside of Chemistry, willing to serve with your advisor and sufficient members of your Research Advisory Committee to make up your Doctoral Examination Committee of at least 4 faculty members (see above for details including a "decision tree").
3. Confirm a defense date with your advisor and your Doctoral Examination Committee members.
4. Reserve a room for your public thesis seminar and a room for your defense through the Graduate Studies Coordinator.
5. Give a copy of your dissertation/thesis to each committee member at least two weeks before your defense date. Generally, this can be provided electronically as a PDF, but some committee members might request a hard copy. In this case, the student is responsible for providing the hard copy.
6. Announce your defense seminar to the Department by sending a copy of your abstract via e-mail to the email address [chem-all@virginia.edu](mailto:chem-all@virginia.edu) one week prior to your defense. Include in the e-mail the date, time, and location of your defense.
7. After your dissertation/thesis is in final form and accepted by your committee, notify the Graduate Studies Coordinator who will have the Final Examination Form signed electronically by all committee members. All other forms, including the Departure Form and Safety Release form, should be submitted to the Graduate Studies Coordinator before departing the Department
8. Upload thesis to the digital repository.
9. All copy charges for the dissertation/thesis are to be paid for by the student. Chemistry Department charge codes will not be used for expenses relating to the defense.

### **Thesis Embargo**

The final thesis is a document that is available publicly. In cases where students and research advisors have reason to delay public access, embargo and limited access options are available. Descriptions are provided below:

1. Embargo: This option is generally used in cases where data in a thesis are to be used in patent applications with potential commercial value.

2. Limited access option: Students who are in the midst of publication are typically advised to select the limited access option when uploading their dissertations to LIBRA. This restricts access to the content of the dissertation solely to members of the UVA community who have current netbadge ID access or to individuals who come to Grounds to access Library holdings from a terminal connected to the UVA network.

Students who are in the midst of publication are typically advised to select the limited access option when uploading their dissertations to LIBRA. This restricts access to the content of the dissertation solely to members of the UVA community who have current netbadge ID access or to individuals who come to Grounds to access Library holdings from a terminal connected to the UVA network. In this sense the policy makes a distinction between typical scholarly publishing practices and, for example, pending patent applications with commercial value. The latter is often appropriate for an embargo request.

For limited access, the student selects this option upon submitting the thesis online. To request an embargo, the research advisor submits a request to the DGS (and copies the student) with a brief explanation for the request. Upon departmental approval, the request is submitted to GSAS, and the Associate Dean for the Graduate School renders a final decision.

## **N. PROCESS FOR CONFLICT RESOLUTION**

During the course of working with others, conflicts can arise. These can involve issues between students, between students and postdocs or research scientists, or between students and research advisor. The steps available to graduate students for assistance with conflict resolution depend in the specific details. Below are some guidelines. Students are encouraged to reach out to the Director of Graduate Studies (DGS) or the Department Chair for a consultation on how to pursue conflict resolution.

Conflict between members of a research group: The initial step for conflict resolution within a group is typically to discuss the situation with the research advisor. If this does not achieve a satisfactory resolution, students can consult with the DGS or the Department Chair. In such cases, the DGS or Chair will commonly lead discussions with the research advisor as well as possibly other members of the research group. In some cases, the DGS and Chair may find it necessary to bring in outside consultants, such as UVA Human Resources.

Conflict between a student and research advisor: A potential first step is for the student to request a meeting with the research advisor to discuss the issue and concerns. If this does not achieve a satisfactory resolution, or if the student would prefer to receive guidance and assistance, options include consultation with a member (or members) of the student's research advisory committee, the DGS and/or the Department Chair. Similar to conflict within a research group (see above), in some cases, the DGS and Chair may find it necessary to bring in outside consultants, such as UVA Human Resources.

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**RESEARCH ADVISOR SELECTION**

TO: Graduate Studies Committee (c/o Sage Bradburn)

FROM: \_\_\_\_\_

RE: Research Advisor Selection

DATE: \_\_\_\_\_

I have interviewed the following 3 or more faculty about the research opportunities in their group:

Faculty Signature  
(Required)

- |          |       |
|----------|-------|
| 1. _____ | _____ |
| 2. _____ | _____ |
| 3. _____ | _____ |
| 4. _____ | _____ |
| 5. _____ | _____ |

I have selected the following faculty in order of preference:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Signed (Student): \_\_\_\_\_



**RESEARCH ADVISORY COMMITTEE SELECTION**

TO: Graduate Studies Committee (c/o Sage Bradburn)

FROM: \_\_\_\_\_

RE: Research Advisory Committee

DATE: \_\_\_\_\_

After consulting with my research advisor, Dr. \_\_\_\_\_, I have chosen the faculty listed below as members for my committee:

	NAME	FACULTY SIGNATURE
Chair:	_____	_____
Member 1:	_____	_____
Member 2:	_____	_____

SIGNED (STUDENT): \_\_\_\_\_

APPROVED (RESEARCH ADVISOR): \_\_\_\_\_

## GRADUATION SAFETY RELEASE FORM

Prior to graduation, each student must verify and sign this form to release official graduation materials. Official graduation will be delayed until you do so.

I verify that I have cleaned the laboratory space that I have used.

I have properly disposed of all chemicals, solvents, and research materials.

I have labeled all research products accurately and stored them properly in authorized chemical storage facilities.

\_\_\_\_\_  
Degree Candidate

\_\_\_\_\_  
Date

\_\_\_\_\_  
Advisor

\_\_\_\_\_  
Date

Please complete the Departure form on the next page before you leave the Department and give it to the Graduate Studies Coordinator. An exit interview will be scheduled with you about your experience in the Department. We welcome any suggestions as to how we may improve the graduate experience in Chemistry. Your name will remain anonymous in the summary reporting of oral exit interviews that will be made periodically to the Graduate Studies Committee.

**DEPARTURE FORM**

**NAME:** \_\_\_\_\_ **ARRIVAL/DEPARTURE DATES:** \_\_\_\_\_

**POSTDOCTORAL** \_\_\_\_\_ **STUDENT** \_\_\_\_\_ **GRADUATION DATE:** \_\_\_\_\_

**UVA DEGREE:** None \_\_\_\_\_ **M.S.** \_\_\_\_\_ **Ph.D.** \_\_\_\_\_

**RESEARCH ADVISOR:** \_\_\_\_\_

**TITLE OF NEW POSITION:** \_\_\_\_\_

**NEW BUSINESS ADDRESS:** \_\_\_\_\_

(include company name)

\_\_\_\_\_  
\_\_\_\_\_

**PHONE NUMBER(S):** \_\_\_\_\_

**EFFECTIVE DATE:** \_\_\_\_\_

**NEW HOME ADDRESS:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**HOME PHONE NUMBER(S):** \_\_\_\_\_

**NEW/NON-UVA EMAIL ADDRESS:** \_\_\_\_\_

**WEBSITE/FACEBOOK ADDRESS?:** \_\_\_\_\_

**COMMENTS:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

(Please continue comments on reverse and additional pages as necessary)

**PLEASE RETURN COMPLETED FORM TO THE GRADUATE STUDIES  
COORDINATOR AND SCHEDULE AN EXIT INTERVIEW**

**UNIVERSITY OF VIRGINIA  
RESEARCH ETHICS POLICY AND PROCEDURES**

I. Introduction

The University of Virginia has two committees assigned responsibility for investigating of alleged misconduct. Investigation of suspected research misconduct in the School of Medicine will be conducted by a permanent Research Ethics Committee of the School of Medicine. The School of Medicine Research Ethics Committee serves at the request of the Dean of the School of Medicine as a permanent advisory committee. In addition to its investigatory responsibilities, it may from time to time, as it or the dean sees fit, issue statements or guidelines about research practices in the School of Medicine. Its membership includes the Assistant Provost for Research. The University Research Ethics Committee serves at the request of the Provost. Its purpose is to investigate allegations of misconduct committed during the conduct of University research by anyone other than a member of the School of Medicine. Research misconduct is defined as actions which cast doubt on the integrity of research and research results, such as (1) invention of data, (2) falsification of existing data, or (3) presentation as one's own of data obtained by another without the latter's permission. This definition and the following procedure also apply to investigations by the Research Ethics Committee of the School of Medicine.

The procedure described in this document is an investigation process, not a hearing. The role of the Committee under this procedure is to investigate, so it may recommend action to the appropriate Vice President or Dean. If the appropriate senior academic official decides to take disciplinary action against a research investigator, he or she may use any regular grievance procedure which applies in the particular case. Due process hearing will be provided in the course of such a grievance procedure.

## II. Request to Investigate

The Committee will investigate suspected research misconduct at the request of the Associate Provost for Research or the Dean of the School of Medicine. Any person inside or outside the University may request the Associate Provost for Research or the Dean to assign the Committee to an investigation. The Dean of the School of Medicine will inform the Associate Provost for Research and the Vice president for Health Sciences of any request to investigate suspected research misconduct. The Associate Provost for research will notify the appropriate academic Vice President of any impending investigation.

## III. Investigation Procedure

Each Committee's goal in investigating suspected research misconduct is to obtain as much accurate and relevant information as the Committee needs to make a recommendation to the appropriate senior academic official, and to obtain such information in as prompt, efficient and non-disruptive manner as possible. Methods of achieving this goal will vary with the circumstances of each case. The following procedures are, therefore, only a preliminary and general guide to the Committees. The Committees may vary the procedure as it chooses for any particular case.

1. After reviewing any written request from the Associate Provost for Research or the Dean for an investigation, and any accompanying written materials, the appropriate Committee will meet to discuss and obtain any additional information available.

2. The Committee will next meet with the person who alleged the misconduct (hereafter referred to as "complainant") to determine the specific nature of the suspected research misconduct and to obtain all information (including documents and names of witnesses, expert or otherwise) which the complainant believes relevant to the Committee's investigation.

3. The Committee chair will arrange for a secretary to attend each Committee meeting to take notes concerning the information provided to the Committee. The chair will periodically prepare written descriptions of the information gathered by the Committee, which will be subject to correction by Committee members.

4. After meeting with the complainant, the Committee chair and one other Committee member will meet with the person accused of research misconduct (hereafter referred to as "respondent"). The respondent can be represented by legal counsel if he or she wishes to do so.

The chair will provide the respondent with a brief written description of the specific nature of the suspected misconduct, but will not reveal the identity of the complainant unless the complainant has consented in advance. The chair will provide the respondent with a copy of the evidence submitted by the complainant and will inform the respondent of any significant changes in procedures which the Committee has decided to use in the case at hand. The chair will ask the respondent to provide the Committee with any written statement he or she wishes to make, and a list of all documents and witnesses which the respondent believes are relevant to the Committee's investigation. The chair will notify the respondent of the date, time and place of the Committee's meeting, which the respondent is invited to attend.

5. After meeting with the complainant and the respondent, the Committee will obtain and review such documents as it decides it should review at that point. It will then meet with the respondent to obtain information relative to the evidence submitted by the complainant. The respondent may be accompanied by his or her legal counsel, but such counsel will not be allowed to participate in the meeting, other than to advise the respondent.

6. After meeting with the respondent, the Committee will decide the number and order of any additional witnesses with whom it wishes to meet. As it progresses in its meetings with witnesses, the Committee will continue to review any additional relevant documents and may at any time request additional meetings with the complainant, the respondent, or other witnesses as the Committee determines appropriate.

7. If at any point during its investigation, the Committee determines insufficient cause exists, the Committee may end its investigation and report its finding to the appropriate senior academic official. Similarly, if at any point during its investigation the Committee determines it has already obtained sufficient information to recommend action by the appropriate senior academic official, it will end its investigation and report its findings.

8. The respondent will not be present at any of the meetings of the Committee with other witnesses except as the Committee may otherwise decide. If the respondent is allowed to attend any such meeting, the respondent and his or her counsel will not be allowed to ask the witness any questions directly but may inform the Committee of the types of questions which the respondent requests the Committee to ask the witness.

9. Except as otherwise specifically provided in this procedure or as required by law or regulation, all records of the Committee's proceedings will be kept confidential and not revealed

to the complainant, the respondent or others. Similarly, participants in the proceedings are required to treat any information, statements, or conclusions as strictly confidential.

10. The Office of the University's General Counsel will provide consultation and advice to the Committee, and the General Counsel or designee may attend any of the meetings of the Committee to provide advice and assistance.

11. After completing its investigation, the Committee will provide the appropriate senior academic official with its written report which will be organized into two sections, the first of which will state the factual findings made by the Committee and the second of which will state the recommendation of the Committee concerning what, if any, action should be taken by the appropriate senior academic official.

12. The Committee report may be transmitted to any Federal, State or private sponsor of research should misconduct in research be found. Similar communications may also take place with the editors of professional journals where the research results have appeared.

The retention of accurately recorded and retrievable results is of the utmost importance in the conduct of research and it is the responsibility of each investigator. The following is the University policy on the recording and storage of laboratory data:

Data and notebooks resulting from sponsored research are the property of the University of Virginia. It is the responsibility of the principal investigator to retain all raw data (in laboratory notebooks or other appropriate format) for at least five years after completion of the research (i.e., publication of a paper describing the work, or termination of the supporting research grant, whichever comes first) unless required to be retained longer by contract, law, regulation or by some reasonable continuing need to refer to them. If the principal investigator leaves the University of Virginia, he or she may transfer such data to another institution, provided that the Vice Provost for Research approves and provided that the University is given written assurance that the data will be retained for the required five-year minimum retention period.