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.

2021 - 2022: GRADUATE PROGRAM ADMINISTRATION

Director of Graduate Studies: Brent Gunnoe, tbg7h@virginia.edu, ph. 982-2692, in Rm. 239

Graduate Studies Coordinator: Susie Marshall, sem8h@virginia.edu, ph. 924-7014, in Rm. 188

Graduate Student Council-President: Kaeleigh Olsen, keo2cw@virginia.edu, ph. 924-5277, Rm. 235
Entering Students I.D. Cards (any time after registration) Click the following link for information: **UVA ID Card Office**

16 9:00 AM – 9:30 AM General Course Advising Chemistry (CHEM #306)
16 9:30 AM – 10:30 AM Specific Course Advising with faculty member and 2 graduate students
   Synthesis (organic focus) & Catalysis (inorganic focus)-Rm. 190; Bioanalytical-PLSB 230; Biophysical-PLSB 030; Chemical Biology-PLSB 430; Physical (including astrochemistry) PLSB 300
16 12:00 PM – 5:00 PM General Chemistry TA Workshop-For CHEM 1411/1611/1811 TAs- CHEM 206
16 5:30 PM – 6:30 PM Social with Peer Mentors and faculty members of the Graduate Studies Comm. (CHEM 3rd Fl Lobby)
17 9:00 AM – 5:00 PM General Chemistry TA Workshop-For CHEM 1411/1611/1811 TAs- CHEM-206
18 9:00 AM – 11:30 AM General Chemistry TA Workshop for CHEM 1411/1611/1811 TAs- CHEM 206
18 12:00 PM – 5:00 PM Dean's Orientation – Entering Graduate Students only
   Panel discussions of academic resources, professional development and responsible conduct in a scholarly community (this event will be virtual)
19 12:00 PM – 1:30 PM Lunch session with small groups of current graduate students (room TBD)
19 9:00 AM-5:00 PM University-Wide TA Workshop-
   All incoming graduate students should have registered for a specific time (Registration) –
20 9:00 AM – 12:00 PM General Chemistry TA Workshop (CHEM 206)
   For CHEM 1411/1611/1811 TAs
20 1:00 PM – 2:00 PM Safety Lecture for entering graduate students only (CHEM 206)
20 2:00 PM – 5:00 PM Orientation and Chemistry assessment exam-in person (CHEM 206)
20 3:00 – 4:00 PM Department Safety Lecture (Maury 209)
21 9:30 AM – 10:45 AM Presentation of PhD+ program with Dr. Sonali Majumdar (CHEM 217)
   Associate Director of Graduate and Professional Development
21 1:00 PM – 2:00 PM Welcome and question and answer session with current graduate Students (PLSB 403)
24 Classes Begin
27 SEPTEMBER
   Last Day to Enroll/Register on SIS without incurring ~$70 late fee
7 .......................... Last Day for Adding/dropping a Course
8 .......................... Last day Drop without W (course removed from transcript)
15 .................................. Health insurance waiver application due if opting out of UVA Health plan
30 .................................. Last Day for Filing Degree Applications for December 2020
30 .................................. NOVEMBER
2 .......................... Apply for Spring 2022 graduation (through February 1)
15 .......................... Research Advisor Selection Due (Entering Fall)
   Departmental Travel Award applications due for Jan. 1 - March 31 travel
24-28 .......................... Thanksgiving Recess
30 .......................... Master's Thesis or Doctoral Dissertation Due for 12/2021 Graduation
30 .......................... DECEMBER
7 .......................... Courses end
8 .......................... Reading day
9 .......................... Examinations (Through December 17)
12 .......................... Reading Day
15 .......................... Reading Day
17 .......................... Fall degree conferral date-Examinations end
Second Semester

JANUARY, 2022

5 ...................................... Candidacy Publication Assigned to 2nd Year Students
19 ...................................... 2nd Year Written Thesis Research Overview Due
19 ...................................... Classes begin
21 ...................................... Last Day Students Can Enroll for Classes via SIS
26 ...................................... 2nd Year Written Publication Critique Due
26 ...................................... Last Day for Adding Courses
27 ...................................... Drop Deadline for Having Courses Removed From Transcript
31 ...................................... Last Day for Filing Graduate Degree Application for May 2021 Graduation

FEBRUARY

1, 2, 3, 4 ............................... 2nd Year Ph.D. Candidacy Examinations (these dates are tentative and could possibly change)
12 ...................................... Time Line to Ph.D. Completion & Funding Requests Due for Ph.D. Students Beyond 4th Year
15 ...................................... Departmental Travel Award applications due for April 1 - June 30 travel

MARCH

4 ...................................... Last Day of Classes Before Spring Recess
5-13 ...................................... Spring Recess
14 ...................................... Classes Resume
15 ...................................... Research Advisory Committee Selection Due (Entering Fall)
17-19 ...................................... Visitation Weekend for Prospective Graduate Students
18 ...................................... Late Drop with W Grade
30 ...................................... Course Enrollment via SIS Begins for Fall Semester 2020

APRIL

14 ...................................... 3rd Year Ph.D. Student Poster Session
15 ...................................... Research Advisor Selection Due (Entering January)
30 ...................................... Doctoral Dissertation and Master’s Thesis Due for May 2021 Graduation

Deadline for submitting dissertation title in pdf form to Graduate Studies Coordinator (Susie Marshall) for May 2021 graduation

MAY

1 ...................................... Research Advisory Committee Selection Due (Entering January)
3 ...................................... Classes end
4, 8, 11 ...................................... Reading Days
5-13 ...................................... Course Examinations
15 ...................................... Departmental Travel Award applications due for July. 1 - September 30 travel
20 ...................................... Final Exercises
31 ...................................... Annual Research Report & CV Due (for 3rd year students and above)

JUNE

30 ...................................... Last day to apply for August graduation in SIS

JULY

14 ...................................... Doctoral/Thesis Completion Petition due (if applicable)
7/19-8/13 ...................................... CAELC (EAP) Summer Intensive Language Course for non-native English speakers
31 ...................................... Deadline for submitting all August graduation materials to the Graduate School
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 assigned faculty adviser 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, including professional development seminars CHEM 7010, 7020 and 7021 as well as and topical research (CHEM 99XX). Completion of six graduate level courses by the end of the fourth semester is required (generally 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 review the student's research progress annually beginning in the fourth semester and, so far as practical, serve on the preliminary qualifying examination for admission to candidacy and 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 course work) are required for a Ph.D. degree, and at least 30 credit hours (comprising at least 24 credit hours of course work) 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.

Only students planning to graduate during the summer with their thesis defense completed before August 1 need to register for summer session. 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 (RLC) Request form. 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.

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. 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.
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. 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 14th 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.

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 | ENVIRONMENTAL HEALTH & SAFETY 2-4911 |

**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 see Susie Marshall (Graduate Studies Coordinator in Rm. 188 or email at sem8h@virginia.edu).

**KEYS**
Graduate students may obtain keys to the building and 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 (TEMPORARY)**
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**
Service as a Teaching Assistant for a minimum two semesters is required for a departmentally-financed M.S. or Ph.D. degree. The gross wages after payment of tuition and fees for the academic year 2020-2021 is $20,000. These wages are paid over 20 bi-weekly pay dates. The first pay date for the fall semester will be Friday, September 4 and you will receive a paycheck every other Friday through May 28, 2021. 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 have a responsibility to be present at all times in the laboratories, tutorial sessions and recitation section to which they have been 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. 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 2020-2021 is $20,000. These wages are paid over 20 bi-weekly pay dates. The first pay date for the fall semester will be Friday, September 4 and you will receive a paycheck every other Friday. The last bi-weekly check date for the Fall 2020 term is December 24, 2020. The last b-weekly pay check for the Spring 2021 term is May 28, 2021. 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 2021 net wages after payment of tuition and fees is $7,000 for graduate research assistants. These wages will be paid in 6 bi-weekly payments. During the summer months, you will not be enrolled for classes and as a result your 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 $10,000 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 are able to 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.

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. It is generally understood that students will take a maximum of 22 days of annual leave including holidays.

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 assistant 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. As a result, students who are paid on a GRA or related departmental support and participate in such paid programs will have their GRA (and related) salary reduced by a comparable amount. This reflects the reduced time commitment dedicated to the GRA (or related) position.

HEALTH MATTERS
Ph.D. students are provided with healthcare on an annual basis with a start/renewal date of August 15. 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.

Maternity and Paternity 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 maternity leave, the student should contact the Director of Graduate Studies with a request by email, who will forward the request with endorsement to GSAS. 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.

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 set 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 six areas are defined as follows:

Molecular Design: Study of the design and synthesis of molecular structures with specific properties and testing of those properties.

Spectroscopy and Dynamics: Development of new tools for quantitative measurement and prediction of molecular properties and chemical processes.

Chemical Biology: The use of chemical tools to understand functions in biological systems.

Bioanalytical Chemistry: Development of new quantitative tools for biological applications.

Quantitative and Physical Biochemistry: experimental and computational characterization of the structures, dynamics, molecular function and properties of biomolecules and living systems.
B. Lecture Course Offerings (note: some chemistry course numbers/names have changed and not all UVa databases have caught up yet).

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Name</th>
<th>Fall/Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 5110</td>
<td>Organic Chemistry III: Structure, Reactivity, and Mechanism</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 5120</td>
<td>Organic Chemistry IV: Synthesis</td>
<td>Spring</td>
</tr>
<tr>
<td>CHEM 5180</td>
<td>Instrumental Theory and Techniques in Organic Chemistry</td>
<td>Spring</td>
</tr>
<tr>
<td>CHEM 5210</td>
<td>Advanced Physical Chemistry I: Quantum Mechanics</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 5220</td>
<td>Advanced Physical Chemistry II: Statistical Mechanics</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 5224</td>
<td>Reaction Kinetics and Dynamics</td>
<td>Spring</td>
</tr>
<tr>
<td>CHEM 5250</td>
<td>Molecular Spectroscopy</td>
<td>Spring</td>
</tr>
<tr>
<td>CHEM 5260</td>
<td>Introduction to Astrochemistry</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 5310</td>
<td>Advanced Inorganic Chemistry I: Reaction Mechanisms</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 5320</td>
<td>Advanced Inorganic Chemistry II: Organometallics and Synthesis</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 5330</td>
<td>Structural Inorganic Chemistry: Characterization and Spectroscopy</td>
<td>Spring</td>
</tr>
<tr>
<td>CHEM 5340</td>
<td>Nanomaterials: Synthesis, Properties, and Applications</td>
<td>Spring</td>
</tr>
<tr>
<td>CHEM 5350</td>
<td>Main Group Inorganic Chemistry</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 5360</td>
<td>Materials Chemistry for Future Energy Needs</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 5380</td>
<td>Determination of Molecular Structure by Diffraction Methods</td>
<td>Spring</td>
</tr>
<tr>
<td>CHEM 5410</td>
<td>Advanced Biological Chemistry I: Molecular Assembly and Information Flow</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 5420</td>
<td>Advanced Biological Chemistry II: Macromolecular Structure and Function</td>
<td></td>
</tr>
<tr>
<td>CHEM 5430</td>
<td>Nanoscale Imaging of Complex Systems in Chemistry and Biology</td>
<td>Spring</td>
</tr>
<tr>
<td>CHEM 5510</td>
<td>Selected Topics in Organic Chemistry (Drug Discovery)</td>
<td></td>
</tr>
<tr>
<td>CHEM 5520</td>
<td>Selected Topics in Physical Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 5530</td>
<td>Selected Topics in Inorganic Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 5540</td>
<td>Selected Topics in Biological Chemistry (Drug Discovery)</td>
<td>Spring</td>
</tr>
<tr>
<td>CHEM 5570</td>
<td>Selected Topics in Analytical Chemistry (Luminescence)</td>
<td></td>
</tr>
<tr>
<td>CHEM 5559</td>
<td>New Course in Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 5570</td>
<td>Advanced Analytical Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 5720</td>
<td>Methods in Bioanalytical Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 5740</td>
<td>Analytical Chemistry: Separations</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 5750</td>
<td>Analytical Chemistry: Spectroscopy</td>
<td></td>
</tr>
<tr>
<td>CHEM 7010</td>
<td>Research Seminar I: Introduction to Research</td>
<td>Fall</td>
</tr>
<tr>
<td>CHEM 7011</td>
<td>Teaching Science in Higher Education (not taught 2020)</td>
<td></td>
</tr>
<tr>
<td>CHEM 7020</td>
<td>Research Seminar II: Research, Innovation, Entrepreneurship, and Ethics</td>
<td>Spring</td>
</tr>
<tr>
<td>CHEM 7021</td>
<td>Communicating Research to Diverse Audiences</td>
<td>Spring</td>
</tr>
</tbody>
</table>
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 5340 Introductory Radio Astronomy
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 5060 Molecular Physiology: From Molecular Machines to Biological Information Processing
BIOP 8020 Advanced Protein Crystallography
BIOP 8030* Magnetic Resonance Spectroscopy of Macromolecules I
BIOP 8031* Magnetic Resonance Spectroscopy of Macromolecules II

* Two credit courses that are often taken as a 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
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 6665</td>
<td>Techniques for Chemical Engineering Analysis and Design</td>
</tr>
<tr>
<td>CHE 6561</td>
<td>Chemistry for Engineering Functional Materials</td>
</tr>
</tbody>
</table>

**COMPUTER SCIENCE**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 5014</td>
<td>Introduction to Programming for non-CS Graduate Students / Computation as a Research Tool</td>
</tr>
<tr>
<td>CS 6160</td>
<td>Theory of Computation</td>
</tr>
<tr>
<td>CS 6161</td>
<td>Design and Analysis of Algorithms</td>
</tr>
<tr>
<td>CS 6444</td>
<td>Introduction to Parallel Computing</td>
</tr>
</tbody>
</table>

**EDUCATION**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDLF 5260</td>
<td>Cognitive Psychology and Education</td>
</tr>
<tr>
<td>EDLF 5330</td>
<td>Quantitative Methods and Data Analysis I</td>
</tr>
<tr>
<td>EDLF 7404</td>
<td>Qualitative Analysis</td>
</tr>
<tr>
<td>EDLF 7410</td>
<td>Mixed Methods Research Design</td>
</tr>
</tbody>
</table>

**ELECTRICAL AND COMPUTER ENGINEERING**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 5241</td>
<td>Optics and Lasers</td>
</tr>
</tbody>
</table>

**ENGINEERING – APPLIED MATHEMATICS**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMA 6150</td>
<td>Linear Algebra</td>
</tr>
<tr>
<td>APMA 6430</td>
<td>Statistics for Engineers and Scientists</td>
</tr>
<tr>
<td>APMA 6440</td>
<td>Applied Partial Differential Equations</td>
</tr>
</tbody>
</table>

**ENVIRONMENTAL SCIENCES**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVGE 5850</td>
<td>Geochemistry</td>
</tr>
<tr>
<td>EVGE 5860</td>
<td>Isotope Geochemistry</td>
</tr>
</tbody>
</table>

**MATERIALS SCIENCE AND ENGINEERING**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE 6010</td>
<td>Electronic and Crystal Structure of Materials</td>
</tr>
<tr>
<td>MSE 6020</td>
<td>Defects and Microstructure in Materials</td>
</tr>
<tr>
<td>MSE 6080</td>
<td>Chemical and Electrochemical Properties</td>
</tr>
<tr>
<td>MSE 6120</td>
<td>Characterization of Materials</td>
</tr>
<tr>
<td>MSE 6130</td>
<td>Transmission Electron Microscope</td>
</tr>
<tr>
<td>MSE 6230</td>
<td>Thermodynamics and Phase Equilibria of Materials</td>
</tr>
<tr>
<td>MSE 6270</td>
<td>Introduction to Atomistic Simulations</td>
</tr>
<tr>
<td>MSE 6592</td>
<td>Topics in Materials Science</td>
</tr>
<tr>
<td>MSE 6670</td>
<td>Electronic, Optical and Magnetic Properties of Materials</td>
</tr>
<tr>
<td>MSE 7220</td>
<td>Surface Science</td>
</tr>
<tr>
<td>MSE 7592</td>
<td>Advanced Topics in Materials Science</td>
</tr>
</tbody>
</table>

**MECHANICAL AND AEROSPACE ENGINEERING**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAE 6592</td>
<td>Introduction to Density Functional Theory (DFT) and Electronic Structure Calculations</td>
</tr>
</tbody>
</table>

**MATH**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 5210</td>
<td>Advanced Calculus with Applied Mathematics</td>
</tr>
<tr>
<td>MATH 5220</td>
<td>Partial Differential Equations and Applied Mathematics</td>
</tr>
<tr>
<td>MATH 5651</td>
<td>Advanced Linear Algebra</td>
</tr>
</tbody>
</table>

**MICROBIOLOGY**
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 research-relevant courses for grade, typically during the first year, but required completion before the end of their 2nd year. Students must also successfully complete 12 credit hours of professional development courses which are the 7010, 7011 (NOTE: CHEM 7011 not offered Fall 2020), 7020, 7021, 7030 and 7031. These professional development courses are not considered among the 18 credit hours of research-relevant graded courses. Nevertheless, 7010 and 7020 do contribute 6 credit hours towards the graduate school degree requirement of accumulating 24 credit hours of 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 research-relevant graded 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:
Molecular Design Program

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>5110  Organic Chem. III</td>
<td>5180  Instrumentation for Synthesis</td>
</tr>
<tr>
<td>7010* Research Seminar I</td>
<td>7020* Research Seminar II</td>
</tr>
<tr>
<td>7011* Teaching Science</td>
<td>7021* Communicating Research</td>
</tr>
</tbody>
</table>

* Professional development courses required for all students

Other courses, such as 5120 Organic Chem. IV, 5320 Adv. Inorganic Chem. II, 5410/20 Adv. Biological Chem., 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. Completion of the required 18 hours of research-relevant graded courses may occur in the second year (first semester) for scheduling reasons.

Bioanalytical Chemistry Program

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>5740  Analytical Chem.: Separations</td>
<td>7020* Research Seminar II</td>
</tr>
<tr>
<td>7010* Research Seminar I</td>
<td>7021* Communicating Research</td>
</tr>
<tr>
<td>7011* Teaching Science</td>
<td></td>
</tr>
</tbody>
</table>

* Professional development courses required for all students

Other courses, such as 5711 Computer Interfacing, 5180 Instrumentation for Synthesis, 5430 Nanoscale Imaging, 5250 Molecular Spectroscopy, 5380 Molecular Structure by Diffraction, MSE 6130 Electron Microscopy, PHYS 5190 Electronic Lab, APMA 6430 Statistics for Scientists, CS 6014 Computing for Scientists, BME 6101/2 Engineering Physiology, 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 research relevant graded courses may occur in the second year (first semester) for scheduling reasons.

Spectroscopy and Dynamics Program

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

* Professional development courses required for all students

Properties of 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. Completion of the required 18 hours of research relevant graded courses may occur in the second year (first semester) for scheduling reasons.

**Chemical Biology Program**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>7010* Research Seminar I</td>
<td>7020* Research Seminar II</td>
</tr>
<tr>
<td>7011* Teaching Science</td>
<td>7021* Communicating Research</td>
</tr>
</tbody>
</table>

* Professional development courses required for all students

Other courses, such as 5110 Organic Chem. III, 5120 Organic Chem. IV, 5430 Nanoscale Imaging, 5720 Methods in Bioanalytical Chem., 5730/40 Adv. Analytical Chem., 5210/20 Adv. Phys. Chem., 5224 Kinetics and Dynamics, 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.

**Quantitative and Physical Biochemistry Program**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>7010* Research Seminar I</td>
<td>7020* Research Seminar II</td>
</tr>
<tr>
<td>7011* Teaching Science</td>
<td>7021* Communicating Research</td>
</tr>
</tbody>
</table>

* 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.), BME 6310 Computational Modeling in Biomedical Engineering, BIOP 8130/8311 (Biological Membranes), BIOP 8030/8031 (Magnetic Resonance), PHYS 5250 (Mathematical Methods for Physicists). Electives for the spring include CS 5014 (Computation as a research tool) or 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. It may be necessary to complete the required 18 hours of graded courses in the second year (first semester) for scheduling reasons.

**Chemical Education**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDLF 5330 Quant. Methods &amp; Data Anal.</td>
<td>CHEM XXXX course #2</td>
</tr>
</tbody>
</table>
CHEM XXX course #1  
EDLF 7404 Qualitative Analysis  
7010* Research Seminar I  
7011* Teaching Science

CHEM XXXX course #3  
EDLF 5260 Cognitive Psych. & Education  
7020* Research Seminar II  
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.

**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 beginning in Fall semester or by April 15 if beginning in Spring semester. The Graduate Studies Committee will consider all advisor 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 January).

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 Committee by March 15 (or May 2 for students entering in January). After approval by the Graduate 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). 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 at least 24 credit hours of successfully completed graded graduate courses 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.

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– or better.

B. Total course credit accumulation of at least 30 credit hours (comprised of at least 24 credit hours of graded 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– or better.

B. Total course credit accumulation of at least 72 credit hours (comprised of at least 24 credit hours of graded 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 written dissertation that describes the research and presents results suitable for publication in the scientific literature. The dissertation must be approved by a Doctoral Examining 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.

F. Successful oral presentation of the dissertation work in a seminar to faculty and students.

G. Successful oral defense of the dissertation to the Doctoral Examining Committee.

H. 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.

I. 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 questions 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 meeting 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 Susie Marshall, 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 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
After completion of the faculty interviews, 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 Studies Coordinator, Susie Marshall (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 Susie Marshall. 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, 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 Susie Marshall (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 semester 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†.

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.

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.

* 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.
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.

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 time-line.

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 Oct. 15 students are required to set the date and room for their seminar and notify the Graduate Program Assistant and committee members.**

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.

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](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](https://acs.org/acsinstitute)

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 Studies Coordinator, Susie Marshall.

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](https://graduate.as.virginia.edu).

**CHECK LIST FOR PREPARATION OF DEFENSE**

1. See GSAS guidelines at: [http://graduate.as.virginia.edu/thesis-submission-and-graduation](http://graduate.as.virginia.edu/thesis-submission-and-graduation) and follow the six steps to graduation listed on that page.

**Apply for Degree Application in SIS.** The deadlines for 2020-2021 are below:

- September 30 for December graduation
- January 31 for May graduation
- June 30 for August graduation

**Thesis title**

**Fall** - Doctoral students who are graduating in the fall term must submit the title of their dissertation on the final exam form.

**Spring** - Doctoral students who are graduating in the spring term must submit the titles of their dissertations to their departments by May 1 (submit to Graduate Coordinator Susie Marshall [sem8h@virginia.edu](mailto:sem8h@virginia.edu)).

**Summer** - Doctoral students who are graduating in the summer term must submit the title of their dissertation on the final exam form.
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 (at least one outside of chemistry representative).

3. Confirm a defense date with your advisor and your Doctoral Examination Committee members.

4. Reserve a room for your defense seminar and a room for your defense through Susie Marshall.

5. Give a copy of your dissertation/thesis to each committee member at least two weeks before your defense date.

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 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, have the Final Examination Form signed and bring or email to Susie Marshall. All other forms, including the Departure Form and Safety Release form, should be brought to Susie Marshall before you leave the Department.


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 netID access or to individuals who come to Grounds to access Library holdings from a terminal connected to the UVA network.

**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 lead 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.
**Twelve Steps to Graduation**

Created in the Harman lab - (Transcribed and adapted by the GSC) - Special Thanks to the Harman Lab!

---

**Pre-Writing**

1) **Talk to your Advisor.** When you get closer to graduating (~1 year away), talk to your advisor and figure out what you want to wrap up before you write up. Find **good stopping points** for your projects, and outline the experiments you want to complete before you leave the lab en route to the keyboard. Also, talk to your advisor about your **timeframe**. Let him/her know your preferred graduation date and think in a retroactively on how to get there. Make sure he/she agrees with you that your goals are attainable. **You always want your advisor's support before initiating your plan of attack.**

2) **Give yourself a cushion.** Writing a dissertation takes a long time. Even if you already have a lot of papers written and you are simply putting them together, the process drags on and on. Many small things come up along the way, such as imbedding figures into the text, checking references, scanning appendix material, numbering/renumbering all compounds/equations/figures including table of contents, etc. Furthermore if you want to graduate at an official university time (May, August, or January), remember that these times are when your final signed document is due. Before that time, you must give your thesis/dissertation to your advisor, then your committee 1-2 weeks before you defend, and then you have to make corrections. **Plan on having the completed document done at least a month before your target date for turning it in.**

3) **Talk to Susie Marshall throughout the process.** She will be your main contact as far as the many forms that need to be completed. She knows the system well and can help you with any changes that have been made over the years.

---

**12 Steps**

1) **Register for classes.** You must be registered for the term you wish to graduate. Contact Susie Marshall about how to register.

2) **Apply for graduation is SIS** - Follow the six steps to Graduation located on the Graduate School of Arts and Science website at: [http://graduate.as.virginia.edu/thesis-submission-and-graduation](http://graduate.as.virginia.edu/thesis-submission-and-graduation)

3) **Submit the title of your thesis** to Susie [sem8h@virginia.edu](mailto:sem8h@virginia.edu) as an attachment in Word and pdf form.

4) **Clear your calendar (~1 month before due).** Your **dissertation should be completely drafted** (it may still be rough- figures exist but not embedded). This draft can be given to your advisor to look over, but it is probably best to give your advisor a chapter at time.

   **Inform your committee of your intentions.** Narrow your defense down to a week so they can check their schedules and get back to you on whether or not they will be in town. To be safe, **your defense week should be at least one week before the graduate school deadline** (more time is better). Also, you need to find **and out-of-department member to serve on your committee.** You advisor will give you some suggestions.

5) **Finish your thesis/dissertation so that you can hand it in to your committee 2 weeks before your defense.** You will need **to talk to Susie about reserving a room.** You need one hour in a classroom like 304 and then at least 2 hours in a conference room. Let Susie give you an unofficial list of open rooms during your designated defense week, then get back to your committee and try to find a good time for everyone.

6) **Confirm defense time** with committee, and tell Susie so she can **confirm it with Carruthers Hall.** She will send you a confirmation. Be prepared to pay for the copying costs for the five copies to be submitted to your committee members. Pick up an equivalent amount of three ring binders from the stockroom. Pick up your copies, place them in the notebook, and deliver them to your advisor and your four other committee members. Keep the
original for yourself. Note: some committee members might accept an electronic version, but this should be verified and not assumed.

Noteworthy here is the condition of your document. It should be in final draft form with all the references, page numbers, compound numbers, figure number, figure embedding, table of contents, etc.

7) Prepare for defense. If you have turned in your thesis/dissertation two weeks before your defense, you now have two weeks. Hopefully, that is enough time, since most of your figures are already made, but if you are slow, plan accordingly.

8) Announce your defense before you defend by sending e-mail to ‘chem-all@virginia.edu’ which tells everyone when and where you will be defending. Also, you should attach a copy of your abstract.

9) After your defense seminar, you go to your actual defense. This is the question and answer period with your committee. After you finish, you can get your Final Examination form signed and then you won’t have to worry about tracking down your committee again.

10) Make the corrections suggested by your committee. Also, you will need to go back and make sure your figures are, when possible, on single pages with their captions on the same page. Unfortunately, this usually means you have to renumber pages and then table of contents. This process is tedious. Make sure you have added any necessary crystal structures and NMR spectra. Also, make sure your margins are correct and that your abstract is the appropriate number of words. After making your final corrections, take it up to the print shop and get two copies for yourself and for your group as needed.

11) Get forms signed. The Final Examination form states you passed the defense exam and has a place to write down the names of your committee. Fill it out and have your advisor and the department Chair sign it. Then take the form to Susie and she will complete the final milestone in SIS for you and submit the form to the GSAS office. Furthermore, you will need to get a Safety Release Form (from Susie) signed by your advisor, as well as a Departure Form (from Susie) if you are leaving the University. The Survey of Earned Doctorates will need to be submitted online. You must also Upload Thesis to Digital Repository. Doctoral and master's students whose degree requires the submission of a thesis must upload the final, approved version of the thesis to the University Library's digital repository, also known as LIBRA.

CHECK LIST FOR THESIS/DISSERTATION SUBMISSION

Up to date information on completion and submission of thesis/dissertation can be found at:

https://graduate.as.virginia.edu/thesis-submission-and-graduation

You are encouraged to visit and familiarize yourself with requirements and process well in advance of your defense.

The following forms must be completed and ready to submit prior to GSAS’s inspection of the Ph.D. dissertation; otherwise, the dissertation will not be accepted:

- Final Examination Form (if department has not already submitted it to GSAS)
- Survey of Earned Document Form (only for Ph.D. degree candidates)
- Upload Thesis to Digital Repository - Doctoral and master's students whose degree requires the submission of a thesis must upload the final, approved version of the thesis to the University Library's digital repository, also known as LIBRA.
The following form must be submitted when you submit your master's thesis unless your department has already submitted the form to GSAS:

**Final Examination Form** (if department has not already submitted it to GSAS)

Upload Thesis to Digital Repository - Doctoral and master's students whose degree requires the submission of a thesis must upload the final, approved version of the thesis to the University Library’s digital repository, also known as LIBRA.

Suggested Page Order:

**Dissertations**
Title Page  
Copyright Page (if applicable)  
Abstract  
Signature Page (if not on the title page)  
Dedication Page (optional)  
Body of Text

**Thesis**
Title Page  
Abstract of introduction (if applicable)  
Signature Page (if not on title page)  
Dedication Page (optional)  
Body of Text

**Digital Format**
Documents are ONLY accepted in PDF format (include all fonts, no compression or password protection). The title page, copyright page (if applicable), abstract, signature page (if not on title page) dedication page (optional) and body of text MUST be combined into ONE pdf file. The file MUST be saved as the student's last name then first name.
Below is a screen shot of the steps in the process (from the Graduate School website listed above):

**Doctoral Degree**
- Step One: Degree Application in SIS
- Step Two: Verify Requirements and UVa Transcripts
- Step Three: Dissertation Title
- Step Four: Final Examination Form
- Step Five: Survey of Earned Doctorates
- Step Six: Upload Thesis to Digital Repository

**En Route Master's Degree for Doctoral Students**
- Step One: Submit Master's Degree Request Form
- Step Two: Verify Requirements
- Step Three: Final Examination Form
- Step Four: Upload Thesis to Digital Repository

**Terminal Master's Degree Students**
- Step One: Degree Application in SIS
- Step Two: Verify Requirements and UVa Transcripts
- Step Three: Final Examination Form
- Step Four: Upload Thesis to Digital Repository
<table>
<thead>
<tr>
<th>FACULTY</th>
<th>RESEARCH AREA</th>
<th>ROOM</th>
<th>PHONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ai, Huiwang, Associate Professor (ha8m)</td>
<td>Organic/Biological/Analytical</td>
<td>Pinn Hall 4020</td>
<td>4-5665</td>
</tr>
<tr>
<td>Bazydlo, Lindsay, Assistant Professor (lal2s)</td>
<td>Pathology</td>
<td>Old Med Sch.</td>
<td>4-2473</td>
</tr>
<tr>
<td>Bushweller, John, Professor (jhb4v)</td>
<td>Physical/Biological</td>
<td>Jordan 4233</td>
<td>3-6409</td>
</tr>
<tr>
<td>Cafiso, David S., Alfred Burger Professor (dsc0b)</td>
<td>Physical/Biological</td>
<td>188A</td>
<td>4-3067</td>
</tr>
<tr>
<td>Cleeves, Lisa, Assistant Professor (lic3f)</td>
<td>Physical/Astronomy</td>
<td>Astr. 215</td>
<td>3-5567</td>
</tr>
<tr>
<td>Columbus, Linda, Associate Professor (lc4zs)</td>
<td>Physical/Biological</td>
<td>PLSB 106</td>
<td>3-2123</td>
</tr>
<tr>
<td>DuBay, Kateri, Assistant Professor (khd2t)</td>
<td>Physical/Biological</td>
<td>388C</td>
<td>3-2159</td>
</tr>
<tr>
<td>Egorov, Sergei, Professor (sae6z)</td>
<td>Physical</td>
<td>267</td>
<td>4-7690</td>
</tr>
<tr>
<td>Fraser, Cassandra L., Professor (cf4n)</td>
<td>Inorganic/Organic/Biological</td>
<td>286</td>
<td>4-7998</td>
</tr>
<tr>
<td>Gahlmann, Andreas, Assistant Professor (ag5vu)</td>
<td>Physical/Biological/Analytical</td>
<td>133</td>
<td>4-3624</td>
</tr>
<tr>
<td>Garrod, Rob, Assistant Professor (rg5qp)</td>
<td>Physical</td>
<td>161</td>
<td>4-0773</td>
</tr>
<tr>
<td>Gilliard, Robert, Assistant Professor (rjg8s)</td>
<td>Organic/Inorganic</td>
<td>229</td>
<td>297-7975</td>
</tr>
<tr>
<td>Grisham, Charles M., Professor &amp; Assoc. Chair (cmg)</td>
<td>Physical/Biological</td>
<td>465</td>
<td>4-7012</td>
</tr>
<tr>
<td>Gunnoc, Brent, Professor (tbg7h)</td>
<td>Inorganic/Organic</td>
<td>239</td>
<td>2-2692</td>
</tr>
<tr>
<td>Harman, W. Dean, Professor and Department Chair (wdh5z)</td>
<td>Inorganic/Organic</td>
<td>288B</td>
<td>3-3060</td>
</tr>
<tr>
<td>Harrison, A. Ian, Professor (ah8t)</td>
<td>Physical/ Analytical/Inorganic</td>
<td>127</td>
<td>4-3639</td>
</tr>
<tr>
<td>Herbst, Eric, Commonwealth Professor (eh2ef)</td>
<td>Physical</td>
<td>166</td>
<td>3-0535</td>
</tr>
<tr>
<td>Hilinski, Michael, Associate Professor (mh6cu)</td>
<td>Organic</td>
<td>288C</td>
<td>4-0159</td>
</tr>
<tr>
<td>Hsu, Ku-Lung &quot;Ken&quot;, Associate Professor (kh4ch)</td>
<td>Organic/Biological/ Analytical</td>
<td>388A</td>
<td>297-4864</td>
</tr>
<tr>
<td>Hunt, Donald F., University Professor (dfh)</td>
<td>Organic/Biological/ Analytical</td>
<td>188B</td>
<td>3-3610</td>
</tr>
<tr>
<td>Landers, James P., Commonwealth Professor (jpl5e)</td>
<td>Biological/ Analytical</td>
<td>388B</td>
<td>3-8658</td>
</tr>
<tr>
<td>Lazo, John, Professor (js18f)</td>
<td>Biological</td>
<td>MR4-4072C</td>
<td>3-1936</td>
</tr>
<tr>
<td>Lehmann, Kevin, William R. Kenan Jr. Professor (kl6c)</td>
<td>Physical/ Analytical</td>
<td>125</td>
<td>3-2130</td>
</tr>
<tr>
<td>Machan, Charlie, Assistant Professor (cwm5b)</td>
<td>Inorganic/Physical</td>
<td>288A</td>
<td>4-7997</td>
</tr>
<tr>
<td>Markewichuk, Lisa, Lecturer (lnm2a)</td>
<td></td>
<td>369</td>
<td>4-0924</td>
</tr>
<tr>
<td>Pate, Brooks H., William R. Kenan Jr. Professor (bp2k)</td>
<td>Physical</td>
<td>131</td>
<td>3-0384</td>
</tr>
<tr>
<td>Pires, Marcos, Associate Professor (mp7aa)</td>
<td>Synthetic Chemistry</td>
<td>253</td>
<td>3-7488</td>
</tr>
<tr>
<td>Pompano, Rebecca, Assistant Professor (rpp2z)</td>
<td>Analytical/ Physical</td>
<td>PLSB 110</td>
<td>2-1825</td>
</tr>
<tr>
<td>Pu, Lin, Professor (lp6n)</td>
<td>Inorganic/Organic</td>
<td>265</td>
<td>4-6953</td>
</tr>
<tr>
<td>Serbulea, Laura, Lecturer (ls3s)</td>
<td>Organic</td>
<td>360</td>
<td>4-0924</td>
</tr>
<tr>
<td>Stains, Cliff, Associate Professor (cs3dh)</td>
<td>Chemical Biology</td>
<td>167</td>
<td></td>
</tr>
<tr>
<td>Stains, Marlyne, Associate Professor (ms2sx)</td>
<td>Chemical Education</td>
<td>PLSB 116</td>
<td></td>
</tr>
<tr>
<td>Swami, Nathan, Professor (ns5h)</td>
<td>Inorganic/Physical/ Analytical</td>
<td>Thornton C218</td>
<td>4-1390</td>
</tr>
<tr>
<td>Venton, Jill, Professor (bjv2n)</td>
<td>Analytical/ Physical</td>
<td>PLSB 108</td>
<td>3-2132</td>
</tr>
<tr>
<td>Welch, Kevin, Lecturer (kdw9e)</td>
<td></td>
<td>361</td>
<td>4-6316</td>
</tr>
<tr>
<td>Wheeler, Lindsay, Lecturer (lsb4u)</td>
<td></td>
<td>Hotel D</td>
<td>2-2816</td>
</tr>
<tr>
<td>Zhang, Sen, Assistant Professor (sz3t)</td>
<td>Inorganic/Physical/ Analytical</td>
<td>188C</td>
<td>4-1494</td>
</tr>
<tr>
<td>STAFF</td>
<td>ROOM</td>
<td>PHONE</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>Arrington, Charles, Organic Lab &amp; Research Tech (cka7e)</td>
<td>450A</td>
<td>4-3717</td>
<td></td>
</tr>
<tr>
<td>Ashcraft, Earl, Instrument Tech</td>
<td>275C</td>
<td>4-7373</td>
<td></td>
</tr>
<tr>
<td>Beamer, Victoria, Reimbursement &amp; Travel Specialist (vlb2d)</td>
<td>465</td>
<td>4-3158</td>
<td></td>
</tr>
<tr>
<td>Birckhead, Michael, Inventory Line Lead (mbw6e)</td>
<td>221</td>
<td>4-1421</td>
<td></td>
</tr>
<tr>
<td>Cropley, Cecelia, Scientific Program Administrator (cc2gg)</td>
<td>465</td>
<td>4-3704</td>
<td></td>
</tr>
<tr>
<td>Dean-Clemmer, Jan, Gen. Chem. Lab. &amp; Res Tech (jyd)</td>
<td>360</td>
<td>4-4716</td>
<td></td>
</tr>
<tr>
<td>DeBary, Ed, Infrastructre Manager</td>
<td>465</td>
<td>4-3157</td>
<td></td>
</tr>
<tr>
<td>Dickie, Diane, Senior Scientist</td>
<td>MSE 103</td>
<td>4-9652</td>
<td></td>
</tr>
<tr>
<td>Ellena, Jeff, Senior Scientist–School of Medicine (jfe)</td>
<td>162</td>
<td>4-3163</td>
<td></td>
</tr>
<tr>
<td>Feggans, Vivian-Administrative Coordinator</td>
<td>288</td>
<td>2-5485</td>
<td></td>
</tr>
<tr>
<td>Ham, Hueng Sik-Lab Specialist I (hh2za)</td>
<td>179</td>
<td>7-4905</td>
<td></td>
</tr>
<tr>
<td>Knight, Cindy, Undergraduate Programs Coordinator (csk3a)</td>
<td>468</td>
<td>4-7995</td>
<td></td>
</tr>
<tr>
<td>Marshall, Susan, Graduate Programs Coordinator (sem8h)</td>
<td>188</td>
<td>4-7014</td>
<td></td>
</tr>
<tr>
<td>Matula, Seth, Business Administrator</td>
<td>465</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price, Carol, Biochem Instructional Lab Support Specialist (caw2n)</td>
<td>PLSB 120</td>
<td>4-7880</td>
<td></td>
</tr>
<tr>
<td>Reiner, Jarred, Information Technologist (jmr6j)</td>
<td>163</td>
<td>4-3077</td>
<td></td>
</tr>
<tr>
<td>Scott, Debbie, Purchasing Specialist (dls9r)</td>
<td>221</td>
<td>2-2104</td>
<td></td>
</tr>
<tr>
<td>Shabanowitz, Jeff, Principal Scientist (Hunt Lab) (js4c)</td>
<td>180C</td>
<td>4-7994</td>
<td></td>
</tr>
<tr>
<td>Shifflett, Jerry, Service Technician (jas5qc)</td>
<td>195</td>
<td>4-3649</td>
<td></td>
</tr>
<tr>
<td>Via, Danny, Storeroom Manager (dwv8f)</td>
<td>221</td>
<td>4-6838</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SERVICES</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Maintenance</td>
<td>5th Floor</td>
<td>4-3618</td>
</tr>
<tr>
<td>Faculty/Staff Mailroom</td>
<td>PLSB 101</td>
<td></td>
</tr>
<tr>
<td>Janitorial Service</td>
<td>322</td>
<td>3-2572</td>
</tr>
<tr>
<td>Mass Spec Lab</td>
<td>157</td>
<td>4-7723</td>
</tr>
<tr>
<td>NMR Lab</td>
<td>105,106</td>
<td>4-3163, 4-4623</td>
</tr>
</tbody>
</table>
RESEARCH ADVISOR SELECTION

TO: Graduate Studies Committee (c/o Susie Marshall)

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):______________________________
TO: Graduate Studies Committee (c/o Susie Marshall)

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:

<table>
<thead>
<tr>
<th>FACULTY</th>
<th>NAME</th>
<th>SIGNATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair:</td>
<td>__________________</td>
<td></td>
</tr>
<tr>
<td>Member 1:</td>
<td>__________________</td>
<td></td>
</tr>
<tr>
<td>Member 2:</td>
<td>__________________</td>
<td></td>
</tr>
</tbody>
</table>

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 Susie Marshall in Rm. #188. She will schedule an exit interview 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 SUSIE MARSHALL IN ROOM 188 AND SCHEDULE AN EXIT INTERVIEW WITH HER
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 it 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.