

# **Chemistry Graduate Student Handbook**

## **University of Virginia**

**2018-2019**

(Update version: 7/11/2018)

### **INTRODUCTION**

This summary is intended to provide answers to questions about 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 as well as take full advantage of advice from the faculty and staff of the University for assembling a graduate educational experience that is optimal for you. Do not hesitate to raise any concerns that you may have with any faculty member or Susie Marshall, Graduate Coordinator.

The description of the degree requirements contained here is a primary statement of components of the requirements that are unique to the Chemistry Department. These requirements are not intended to displace the more general statement of the graduate degree requirements provided in the Graduate Record, which must be satisfied in any case. 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.

### **2017-2018: GRADUATE PROGRAM ADMINISTRATION**

Graduate Studies Committee:	Ian Harrison (Chair) Dave Cafiso Eric Herbst Sergei Egorov Don Hunt Tim Macdonald Cameron Mura Brooks Pate Lindsay Wheeler Nichole Schwartz Susie Marshall (non-voting member of the committee)
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Director of Graduate Studies: Ian Harrison

Graduate Coordinator: Susie Marshall, [sem8h@virginia.edu](mailto:sem8h@virginia.edu) , ph. 924-7014, in Rm. #188

Graduate Student Council-President: Nichole Schwartz, [nas7md@virginia.edu](mailto:nas7md@virginia.edu), ph. 924-5277, in CHEM 262

## 2018-2019 CALENDAR

### First Semester

#### AUGUST, 2018

1-31	(only after registration).....	Entering Students-I.D. Cards produced – <a href="#">Observatory Hill Dining Lower Level</a> – 8:30AM – 4:30 PM
15	.....	Dept'l Travel Award applications due for October 1 – December 31 travel
20-21	.....9:00 A.M-5:00 PM.....	General Chemistry TA Workshop (CHEM 1411-1611)- Dell 1, 105 CHEM 1811 TAs will also attend this workshop
22	.....9:00 AM-12:00 P.M.....	General Chemistry TA Workshop (CHEM 1411-1611)- Dell 1, 105 CHEM 1811 TAs will also attend this workshop
22	.....12:00 PM – 6:00 pm	Lunch and Dean's Orientation – Entering Graduate Students only Newcomb Hall Ballroom
23	.....8:30 AM-5:00 PM .....	<a href="#">University-Wide TA Workshop</a> -Nau Hall Lobby ( <a href="#">Registration</a> ) Teaching as a Graduate Student
24	.....9:00 AM-1:00 PM	General Chemistry TA Workshop (CHEM 1411-1611)-Dell 1, 105 CHEM 1811 TAs will also attend this workshop
	.....1:00 P.M-5:00 PM.....	Orientation, Safety Lecture and Chemistry assessment exam-Dell 2 Rm. 100 (Entering Graduate Students sign off with EHS for Safety Certification)
	.....3:00 PM.....	Department Safety Lecture-Environmental Health & Safety-MEC 205 (Entering Graduate Students do not attend-separate safety lecture at 1:00
25-27	.....	Advising and Registration
27	.....10:00 AM.....	Advising: BioAnal-Rm. 190 Biol.-PLSB 230, Mol. Design-PLSB 030 Spec & Dyn-PLSB 403
28	.....	Classes Begin
31	.....	Last Day to Enroll/Register on <a href="#">SIS</a> without incurring ~\$70 late fee and considerable added bureaucracy to clear Holds on enrollment.

#### SEPTEMBER

11	.....	Last Day for Adding a Course
12	.....	Drop Deadline to have Courses 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 2018

#### OCTOBER

6-9	.....	Reading Days
10	.....	Classes Resume
23	.....	Late Drop with W Grade
31	.....	Returning Graduate Course Enrollment via SIS for Spring Semester 2018

#### NOVEMBER

15	.....	Research Advisor Selection Due (Entering Fall) Dept'l Travel Award applications due for January 1 - March 31 travel
21-25	.....	Thanksgiving Recess
26	.....	Classes Resume
30	.....	Master's Thesis or Doctoral Dissertation Due for 12/2018 Graduation

#### DECEMBER

1	.....	New Graduate student enrollment via SIS for Spring Semester 2018
7	.....	Classes End
9, 13, 16	.....	Reading Days
10-18	.....	Course Examinations
18	.....	Fall Degrees Conferred

# **2018-2019 Calendar**

## **Second Semester**

### **JANUARY, 2019**

8	.....	Candidacy Publication Assigned to 2 <sup>nd</sup> Year Students
14	.....	Classes begin
22	.....	Last Day Students Can Enroll for Classes via SIS
22	.....	2 <sup>nd</sup> Year Written Thesis Research Overview Due
29	.....	2 <sup>nd</sup> Year Written Publication Critique Due
31	.....	Last Day for Filing Graduate Degree Application for May 2019 Graduation

### **FEBRUARY**

5, 6, 7 & 8	.....	2 <sup>nd</sup> Year Ph.D. Candidacy Examinations
5	.....	Last Day for Adding Courses
8	.....	Drop Deadline for Having Courses Removed From Transcript
12	.....	Time Line to Ph.D. Completion & Funding Requests Due for Ph.D. Students Beyond 4 <sup>th</sup> Year
15	.....	Dept'l Travel Award applications due for April 1 - June 30 travel

### **MARCH**

8	.....	Last Day of Classes Before Spring Recess
9-17	.....	Spring Recess
18	.....	Classes Resume
15	.....	Research Advisory Committee Selection Due (Entering Fall)
18	.....	Late Drop with W Grade
30	.....	Course Enrollment via SIS Begins for Fall Semester 2019

### **APRIL**

11	.....	3rd Year Ph.D. Student Poster Session
15	.....	Research Advisor Selection Due (Entering January)
30	.....	Classes end Doctoral Dissertation and Master's Thesis Due for May 2019 Graduation

### **MAY**

1	.....	Deadline for submitting dissertation title in pdf form to Graduate Coordinator (Susie Marshall) for May 2019 graduation
	.....	Research Advisory Committee Selection Due (Entering January)
	.....	Reading Day
2-10	.....	Course Examinations
5, 8	.....	Reading Days
15	.....	Dept'l Travel Award applications due for July 1 - September 30 travel
17-19	.....	Final Exercises
31	.....	Annual Research Report & CV Due (for 3 <sup>rd</sup> year students and above)

### **JUNE**

5	.....	Continuous Enrollment forms due for summer
30	.....	Last day to apply for August graduation in <u>SIS</u>

### **JULY**

15	.....	Doctoral/Thesis Completion Petition due (if applicable)
7/12-8/7	.....	CAELC (EAP) Summer Intensive Language Course for non-native English speakers
31	.....	Deadline for submitting all August graduation materials to the Graduate School

# One Year M.A. Program

## Description

This self-financed M.A. 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 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 an important parallel component of the M.A. program are activities and classes designed to improve their English fluency provided through the Center for American English Language and Culture ([CAELC](#)). Further M.A. program details are available at <http://chem.virginia.edu/graduate-studies/the-m-a-program/>.

## Registration:

Students pursuing the one year MA should enroll in graded and/or research courses for a total of 15 credit hours each semester.

## 2018-2019 Calendar (M.A. specific dates)

### JULY, 2018

15 ..... Center for America English Language and Culture (CAELC) - Orientation and classes begin: Sunday, July 16, 2018 & continue until August 10, 2018.\*

### AUGUST

7 ..... Course Enrollment via SIS for Fall Semester 2017  
20 ..... CAELC August SPEAK test and enrollment in CAELC courses\*  
22 ..... GSAS Orientation for new graduate students in Newcomb Hall Ballroom will take place between 4:00 and 6:00 pm  
23 ..... 11:30 AM ..... Orientation- PLSB 230  
Lunch, Tour of Chemistry facilities and Aquatic Fitness Center  
Desk assignments in research labs  
24 ..... 9:00 AM..... M.A. Advising and Assessment Exam – PLSB 230  
..... 3:00 PM..... Department Safety Lecture (attendance required) – MEC 205  
28 ..... Academic classes begin. CAELC suggested ESL courses begin\*,†  
Twice weekly semi-private English tutoring from CAELC begins\*

### NOVEMBER

1 ..... Course Enrollment via SIS for Spring Semester 2017  
Mid-November ..... TOEFL test in Lynchburg, VA\*

### DECEMBER

10 ..... CAELC December SPEAK test\*

### JANUARY, 2019

31 ..... Last Day for Filing Graduate Degree Application for May 2017 Graduation

### May

5 ..... CAELC May SPEAK test\*

\* Native English speakers and those with TOEFL Speak test scores of 24 or above are exempt from this requirement.

† Once a student is enrolled in an ESL course, they must complete the course and achieve a grade of Satisfactory. They may petition the Director of Graduate Studies during the term, but not afterwards, to withdraw from the course.

## **ADMISSION AND ORIENTATION**

### **ADMISSION**

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 Committee has 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, excluding professional development seminars (CHEM 70xx), and topical research. Completing fewer courses may delay the student's program and may prevent attainment of Ph.D. candidacy.

After research adviser selection, the Graduate Studies Committee, in consultation with the research adviser, 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 periodically 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**

All students are required to register for at least 12 credit hours every fall and spring semester until a degree is granted. First year graduate students should register for 15 credit hours/semester and upper year students should register for 12 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), for a Masters 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 load requirement.

Only students planning to graduate during the summer, with their thesis defense completed before August 1, need to register for summer session. Domestic students can do so by registering for 6 credit hours. International students graduating in the summer must register for 6 credit hours of summer session to keep their visa current.

### **THE HONOR CODE**

The University of Virginia operates with an honor system. You are responsible for understanding this honor system in detail 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 extremely 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 done in the

Chemistry Department. Violations of these ethics will almost always result in immediate dismissal from the program.

## FACILITIES

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

PLEASE MAKE SURE THAT APPROPRIATE PRACTICES ARE ROUTINE.

Building Security is crucial 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) immediately or to UVA Security (4-7088). After hours, building doors to the research areas are locked. Help maintain security to these areas by keeping these doors closed and locked.

Safety depends on the attention of everyone 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 solvents, and by your constant attention to the health hazards of chemicals used in the laboratory.

Safety goggles are required anytime experimental work is in progress. Teaching Assistants must wear safety goggles 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 have 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 potentials any time you have an experiment running. Water pressures change throughout the day; therefore, if water hose connections are used, wire those connections to secure them against failure. Examine sink drains to make sure they will flow freely.

For chemicals that must be stored cold, make sure that you use an explosion-proof refrigerator. Do not place food in a chemical refrigerator, and do not eat in a chemical laboratory space. People working with radioactive materials will be instructed 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.

We will provide a chemical safety manual prepared by the Department of Environmental Health and Safety. It is your responsibility to read, understand, and follow the procedures contained in that manual.

Bring any safety concern to the immediate attention of the Chairman.

EMERGENCY 9-911

ENVIRONMENTAL HEALTH & SAFETY 2-4911

## **STUDENT ID BADGES**

Entering Ph.D. and M.A. students may obtain a SMART student ID badge upon arrival 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 Coordinator in Rm. 188 or email at [sem8h@virginia.edu](mailto:sem8h@virginia.edu)).

## **KEYS**

Graduate students may obtain keys to the building and laboratories from Eddie Byers in Room 206. Keys must be returned upon termination of your appointment.

## **MAIL**

Student mailboxes are provided in Room 235. Outgoing mail should be placed in the basket provided at the window in the Storeroom (Room 212).

## **BULLETIN BOARDS**

Notices of interest to graduate students are posted on the bulletin board next to Room 260. Notices to be posted should be brought to Room 404. The bulletin board outside Room 260 contains departmental and University seminar notices and employment notices.

## **PROGRAM INFORMATION ON THE WEB**

<http://chem.virginia.edu/graduate-studies/>

## **FINANCIAL SUPPORT**

## **TEACHING ASSISTANTS**

Service as a teaching assistant is required for a departmentally-financed M.A., M.S., or Ph.D. degree and two semesters of such service are the minimum required. The gross stipend after payment of tuition and fees for the academic year 2016-2017 is \$20,000. This stipend is paid over 20 bi-weekly pay dates. The first pay date for the fall semester will be Friday, August 30 and you will receive a paycheck every other Friday. 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. No taxes of any type are deducted from these fellowship payments and it is, therefore, your responsibility to determine the extent of tax liability for this financial assistance.

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. You are a professional member of the teaching staff of the Department. This means giving students the quality of education they expect and deserve to receive at the University of Virginia. Teaching Assistants normally have 5-10 contact hours per week, which may require a total investment of 15-25 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 major calamity. It is your responsibility to arrange for someone to cover your assignment and to inform the person in charge of the course of this substitution.

### **RESEARCH ASSISTANTS**

Research assistantships are generally awarded 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 are awarded based on the recommendation of the individual faculty member responsible for the program.

The gross stipend after tuition and fees for the academic year 2016-2017 is \$20,000. This stipend is paid over 20 bi-weekly pay dates. The first pay date for the fall semester will be Friday, August 30 and you will receive a paycheck every other Friday. 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. No taxes of any type are deducted from these fellowship payments. It is your responsibility to determine the extent of tax liability for this financial assistance.

### **SUMMER RESEARCH ASSISTANTSHIP AWARDS**

The summer 2017 net stipend after payment of tuition and fees is \$7,000 for graduate research assistants. This stipend 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. Summer research assistantships are the responsibility of faculty advisors and depend upon adequate external research support.

### **CONTINUATION OF FINANCIAL AID**

The Chemistry Department attempts to provide 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 continuing beyond their second year in M.A. or M.S. programs or beyond the 4th year in the Ph.D. program are placed in a lower priority for departmental support.

Students who terminate degree programs or transfer to other Departments of the University will no longer be eligible for appointment as teaching assistants or fellows 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, as well as 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.

Taxes are not deducted from fellowship payments. 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.

A research assistantship generally derives from research grant funds, which are allocated by various agencies to work on a specific problem. Detailed working conditions for these grants may differ, but are more generally similar to those in the business community; i.e., no work, no pay. Therefore, vacation schedules should be discussed with individual faculty who are responsible for the administration of the research grant from which the research assistant is paid.

## **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 additional employment when appointed full-time. In cases where the student, advisor, and the department deem additional employment appropriate, the student must send a request via e-mail to the Director of Graduate Studies (DGS) that describes his or her progress toward the degree, the proposed weekly level of outside effort, the rationale for the overload, and confirmation of whether the student holds an international visa. If the DGS supports the request, he or she will forward the e-mail to the GSAS assistant dean with an endorsement, confirming and enhancing as necessary the justification provided by the student. The GSAS assistant dean will review and respond to the petition.

## **DEPARTMENTAL ACADEMIC REQUIREMENTS**

An advanced degree represents demonstrated scholarship as well as intellectual independence and stands as a symbol of continuing development. 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 learn new chemistry. The faculty 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**

In order to better prepare students for a career in chemistry, the department has identified four broad areas of study that parallel the more traditional sub disciplines of organic, inorganic, physical/analytical, and biological chemistry. These are defined as follows:

Molecular Design: Chemical synthesis for the rational design of molecular structures with certain desired 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.

There is considerable overlap of these areas and many (most) research groups will be working on projects that encompass several. Nonetheless, it is possible to identify specific courses in chemistry and related subjects that students must master in order to most effectively participate in programs within these areas. For example, students in the molecular design program will likely benefit from courses in organic and organometallic syntheses and analysis but may not require courses in advanced statistical mechanics. In the present program, areas of study typically suggest three core courses for all students in that area and a selection of additional courses that will be

taken in consultation with the research advisor to best fulfill the needs of each student to successfully pursue their research project. Though the course requirements for each of the areas may differ, the other requirements such as the second year candidacy exam and the third year poster sessions remain the same. The overall goal of this area program is to provide a more flexible offering of coursework to better fit the research needs of each student.

**B. Lecture Course Offerings** (n.b., some chemistry course numbers/names have changed and not all UVa databases have caught up yet.)

Course #	Course Name	Fall/Spring
CHEM 5110	Organic Chemistry III: Structure, Reactivity, and Mechanism	Fall
CHEM 5120	Organic Chemistry IV: Survey of Synthetic Methods- Selectivity, Scope, and Limitations	Spring
CHEM 5180	Instrumental Theory and Techniques in Organic Chemistry	Spring
CHEM 5210	Advanced Physical Chemistry I: Quantum Mechanics	Fall
CHEM 5220	Advanced Physical Chemistry II: Statistical Mechanics	Fall
CHEM 5224	Reaction Kinetics and Dynamics	Spring
CHEM 5250	Molecular Spectroscopy	Spring
CHEM 5260	Introduction to Astrochemistry	Fall
CHEM 5310	Advanced Inorganic Chemistry I: Reaction Mechanisms	Fall
CHEM 5320	Advanced Inorganic Chemistry II: Organometallics and Synthesis	Fall
CHEM 5330	Structural Inorganic Chemistry: Characterization and Spectroscopy	Spring
CHEM 5340	Nanomaterials: Synthesis, Properties, and Applications	Fall
CHEM 5350	Main Group Inorganic Chemistry	Fall
CHEM 5360	Materials Chemistry for Future Energy Needs	
CHEM 5380	Determination of Molecular Structure by Diffraction Methods	
CHEM 5410	Advanced Biological Chemistry I: Molecular Assembly and Information Flow	Fall
CHEM 5420	Advanced Biological Chemistry II: Macromolecular Structure and Function	Spring
CHEM 5430	Nanoscale Imaging of Complex Systems in Chemistry and Biology	Spring
CHEM 5510	Selected Topics in Organic Chemistry (Drug Discovery)	Fall
CHEM 5520	Selected Topics in Physical Chemistry	
CHEM 5530	Selected Topics in Inorganic Chemistry	
CHEM 5540	Selected Topics in Biological Chemistry	
CHEM 5570	Selected Topics in Analytical Chemistry	
CHEM 5559	New Course in Chemistry	
CHEM 5710	Advanced Analytical Chemistry	
CHEM 5711	Computer Interfacing and Applications to Chemistry	
CHEM 5720	Methods in Bioanalytical Chemistry	Spring
CHEM 5740	Analytical Chemistry: Separations	Fall

CHEM 5750	Analytical Chemistry: Spectroscopy	
CHEM 7010	Research Seminar I: Introduction to Research	Fall
CHEM 7011	Teaching Science in Higher Education	Fall
CHEM 7020	Research Seminar II: Research, Innovation, Entrepreneurship, and Ethics	Spring
CHEM 7021	Communicating Research to Diverse Audiences	Spring
CHEM 7030	Research Seminar III: Preparation for Ph.D. Candidacy Exam	Fall
CHEM 7031	The Art of Scientific Writing	Fall

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

## BIOLOGY

BIOL 7320 Signal Transduction: How Cells Talk to Each Other

## BIOPHYSICS

BIOP 5060 Molecular Physiology: From Molecular Machines to Biological Information Processing  
 BIOP 8020 Advanced Protein Crystallography  
 BIOP 8030 Magnetic Resonance Spectroscopy of Macromolecules

## 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 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

## **COMPUTER SCIENCE**

- CS 5014 Introduction to Programming for non-CS Graduate Students / Computation as a Research Tool  
CS 6160 Theory of Computation  
CS 6161 Design and Analysis of Algorithms  
CS 6444 Introduction to Parallel Computing

## **ENGINEERING – APPLIED MATHEMATICS**

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

## **ENVIRONMENT SCIENCES-GEOSCIENCES**

- EVGE 5850 Geochemistry  
EVGE5860 Isotope Geochemistry

## **MATERIALS SCIENCE AND ENGINEERING**

- MSE 6020 Defects and Microstructure in Materials  
MSE 6080 Chemical and Electrochemical Properties  
MSE 6130 Transmission Electron Microscope  
MSE 6230 Thermodynamics and Phase Equilibria of Materials  
MSE 6592 Topics in Materials Science  
MSE 6670 Electronic, Optical and Magnetic Properties of Materials  
MSE 7220 Surface Science  
MSE 7592 Advanced Topics in Materials Science

## **MECHANICAL AND AEROSPACE ENGINEERING**

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

## **MATH**

- MATH5210 Advanced Calculus with Applied Mathematics  
MATH5220 Partial Differential Equations and Applied Mathematics  
MATH5651 Advanced Linear Algebra

## **MOLECULAR PHYSIOLOGY AND BIOLOGICAL PHYSICS**

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

## **NEUROSCIENCE**

- NESC 7030 Neurobiology

## **PHARMACOLOGY**

- PHAR 9010 Human Pharmacology  
PHAR 9020 Molecular Characterization of Drug Targets

## PHAR 9080 Biochemical Pharmacology

### **PHYSICS**

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

### **C. Graduate Course Requirements**

In the Graduate School, a cumulative GPA of 3.0 (B) or better must be maintained, and a passing course grade is B- or better. Students must successfully complete 18 credit hours of research-relevant courses for grade, ideally over their first year, but certainly before their 2<sup>nd</sup> year Ph.D. Candidacy Exam. Students must also successfully complete 12 credit hours of professional development courses which are the 7010, 7020, and 7030 Research Seminars, and the 7011, 7021, and 7031 one credit hour career skills courses. These professional development courses are taken sequentially in 70x0/70x1 pairs over 3 semesters for all Ph.D. students and are not considered amongst 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. Some focus areas may also require participation in student seminars. For these and other special requirements, students should consult with their individual faculty advisors. Grades in the research-relevant graded courses will be part of the evaluation process in the admission to Ph.D. candidacy deliberations by the faculty in February of the second year. Additional courses may be taken at any time with permission of the student's Research Advisor and the Director of Graduate Studies. First year students will enroll for 15 credit hours/semester and upper year students for 12 credit hours/semester. The recommended foundational courses for the first year of study in the area programs follow:

### **Molecular Design Program**

<u>Fall</u>	<u>Spring</u>
<b>5110 Organic Chem. III</b>	<b>5180 Instrumentation for Synthesis</b>
<b>5310 Adv. Inorganic Chem. I</b>	<b>7020* Research Seminar II</b>
<b>7010* Research Seminar I</b>	<b>7021* Communicating Research</b>
<b>7011* Teaching Science</b>	

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.

**\*Required Professional Development Courses**

**Bioanalytical Chemistry Program**

<u>Fall</u>	<u>Spring</u>
<b>5410 Adv. Biological Chem. I</b>	<b>5420 Adv. Biological Chem. II</b>
<b>5730 Adv. Analytical Chem.</b>	<b>5720 Methods in Bioanalytical Chem.</b>
<b>5740 Analytical Chem.: Separations</b>	<b>7020* Research Seminar II</b>
<b>7010* Research Seminar I</b>	<b>7021* Communicating Research</b>
<b>7011* Teaching Science</b>	

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.

**\*Required Professional Development Courses**

**Spectroscopy and Dynamics Program**

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

Other courses, such as 5260 Intro. to Astrochem., 5730/40 Adv. Analytical Chem., 5410/20 Adv. Biological Chem., 5430 Nanoscale Imaging, PHYS 5310 Optics, PHYS 5620 Solid State Physics, CS 6014 Computing for Scientists, MSE 6670 Electronic, Optical, and Magnetic 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.

**\*Required Professional Development Courses**

**Chemical Biology Program**

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

**7010\* Research Seminar I**

**7011\* Teaching Science**

**5420 Adv. Biological Chem. II**

**7020\* Research Seminar II**

**7021\* Communicating Research**

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.

**\*Required Professional Development Courses**

**Quantitative and Physical Biochemistry Program**

Fall

**5410 Adv. Biological Chem I**

**5220 Adv. Phys. Chem II- Stat. Mech.**

**7010\* Research Seminar I**

**7011\* Teaching Science**

Elective determined with advisor

Spring

**5420 Adv. Biological Chem II**

**8201/8301 Biophysical Principles I&II**

**7020\* Research Seminar II**

**7021\* Communicating Research**

Elective determined with advisor

**\*Required Professional Development Courses**

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.

**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 August or by April 15 if beginning in January. The Graduate Committee will consider all adviser selections. No selections are final until the Graduate Studies Committee has approved them. Barring extenuating circumstances, all approvals will be made before November 28 or April 25 (for students entering in January).

In consultation with his or her Research Adviser, 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. Requirements for Master of Arts (M.A.) Degree**

- A. Total course credit accumulation of at least 30 credit hours comprised of 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<sup>-</sup>. Both graded lecture and research coursework can provide credit hours towards the M.A. degree. Note that after award of an MA degree, it is not possible to gain a subsequent M.S. degree by simple addition of a M.S. thesis and its defense (coursework requirements would need to be satisfied anew).

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

- A. Successful completion of the core degree requirements and 7010 and 7020 with course grades of B<sup>-</sup> or better.
- B. Total course credit accumulation of at least 30 credit hours (comprised of at least 24 credit hours of 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 M.A. degree and will be disqualified from pursuit of a Ph.D. degree in the Chemistry Department.

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

- A. Successful completion of the core degree requirements and 7010, 7011, 7020, 7021, 7030 and 7031 with grades of B<sup>-</sup> or better.
- B. Total course credit accumulation of at least 72 credit hours (comprised of at least 24 credit hours of 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 PhD, can be approved as part of the core Examining Committee if the DGS 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 to this five-year rule may be granted with approval of the research advisor and the Graduate Studies Committee.
- 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 M.S. or M.A. 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. The new students are entirely free agents (i.e., not tied to the particular research group in whose lab their desk is located) and should immediately begin searching for an optimal research group through the Fall until a research advisor is formally chosen and assigned in late November. First year Ph.D. students should seek out opportunities to learn more about research groups by chatting with faculty, other graduate students, performing some experiments or calculations, attending research group meetings, and so on. Students are encouraged to explore these learning 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.

#### 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 (30 minute) surveys of their on-going research programs. All entering students are required to attend this seminar series. It is the purpose of this series to expose new students to research opportunities available in the 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.

## **2. Faculty Interviews.**

After the conclusion of the research orientation seminar series, each student will arrange more formal 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.

## **3. 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 the faculty member and the student, will assign a second choice.

All students must return the completed selection form to the Graduate 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 before Thanksgiving break to review these selections for the entire class. No research advisor selections are final until the Graduate Studies Committee has approved them. Barring extenuating circumstances, all decisions will be made before the Thanksgiving break for those entering in the fall.

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.

## **4. 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. 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.**

At the end of each Spring semester, and until completion of the degree, each Ph.D. student beyond the second year in residence will file an annual report on research progress. The report should concisely summarize in two or three pages (single-spaced) the student's research accomplishments during the previous twelve months. Appended to the report should be a brief, typically one or two page, curriculum vitae (CV) listing the student's University Education (including anticipated Ph.D. thesis title and dissertation date), Teaching Activities, Academic Awards, Publications, and Presentations. The student's Research Advisory Committee will have the opportunity to review this information and recommend any action it deems appropriate to the Graduate Studies Committee. In cases where there is little or no progress, it may recommend that the candidacy of the student for the Ph.D. degree be revoked. The annual research report and CV must be submitted electronically as a single pdf file to the student's Research Advisory Committee and the Graduate Coordinator within the time window May 15-31. The Graduate Coordinator may administratively reject submissions containing an annual research report longer than three pages. A rejected submission must be rewritten to conform to the page limits.

In some cases, review of the annual report may require that the student meet with members of the Research Advisory Committee or with the Graduate Studies Committee. In other cases, no additional meetings may be necessary. In all instances, students whose performance is deemed unsatisfactory will be notified in writing by the Graduate Studies Committee. When financial circumstances allow, these annual report & CV submissions may serve as a basis for the competitive award of upper year fellowships.

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

### **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 is based on the candidate's critique of an assigned journal article related to his or her area of research. 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 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 detailed 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 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 (not counting a Reference List), it 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, with the caveat that references should always include article titles. Experimental procedures, and other supporting information should be included in an appendix. Material in this section should be illustrative and supportive, but not essential to the overall understanding of the project. The report should be organized along the following lines:

1. Introduction (1-3 pages)
  - a. Testable Hypothesis
  - b. Related Published Work by Others
2. Progress to Date (6-7 pages)
3. Plans for Future Work (1-2 pages)
4. Appendix (experimental procedures, 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 in consultation with the chair of the student's Research Advisory Committee. 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 a 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. In this seminar course, the instructor will work with students to assist in 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 Coordinator before January 23. The publication critique should be electronically submitted before January 30.
- 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 presentations, the faculty will meet as a committee of the whole to evaluate 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, pass, conditional pass, or fail.
- e. If the faculty recommends conditional pass, remedial action to be completed 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 for the Ph.D. program but will be permitted to complete a master's degree. In such cases the student may:
  1. terminate with an MA degree by May of that year<sup>‡</sup> or,
  2. write and successfully defend an MS thesis by August of that year<sup>§</sup>.
- g. A student who selects the 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

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<sup>‡</sup> 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.

<sup>§</sup> Note: In some research laboratories it may not be possible to undertake a research program that culminates in a M.S. degree. Students will be advised of this limitation during their first year prior to selection of a research advisor. Students selecting one of these research groups will not have the option of completing an M.S. thesis and must terminate their program with an M.A. degree.

examination which will take place with the Research Advisory Committee who, upon completion of the thesis seminar, will cover the student's general chemical knowledge in addition to topics related to the thesis. If the thesis is deemed acceptable by the Committee and the student is judged to have passed the oral examination, admission to the Ph.D. program will be recommended.

#### **D. Third Year Presentation**

In the spring of the third year in residence, students will present their research in a public forum essentially identical to that of a national or international scientific meeting. This format will be announced each year but will generally involve preparation of a poster in a poster session similar to those at national American Chemical Society Meetings. A written one-page abstract of the poster will be electronically submitted to the Graduate Coordinator one week before the presentation. These abstracts will be assembled in to a booklet for distribution prior to the session.

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

In the Spring of the fifth year in residence, students will submit a detailed timeline for the completion of their research and Ph.D. dissertation defense, along with a curriculum vitae, to the Graduate Studies Committee and their Ph.D. advisor. If for some reason the Ph.D. is not anticipated to be completed at the end of 5 years in residence and additional financial support is desired, the student must supply the materials above, and a supporting letter from their advisor, to the Graduate Studies Committee for approval. The Department seeks to reduce the current 5 year median time to degree in Chemistry. The Graduate School of Arts and Sciences limits residency in any Ph.D. program to seven years.

#### **F. 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 his or her 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 shortcomings in the dissertation/thesis and will be given specific instructions regarding the manner in which these are to be addressed. If no serious problems are identified, the defense will take place as scheduled.

5. If substantial but correctable problems are found prior to the defense, the student will address them, reschedule the defense, and distribute corrected copies of the dissertation/thesis to the committee members who will evaluate the revised dissertation/thesis. If this version is deemed defensible, the committee will inform the student who may then proceed with the scheduled seminar and defense.
6. If the revised thesis is still not acceptable to the committee, the student will be so informed and specific recommendations will be made for additional revisions.
7. Only upon approval by the examining committee, will the dissertation/thesis seminar and defense take place. Following a successful defense, 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 MS or Ph.D. degree will only be given upon successful performance of these exercises.

## **G. 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 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. When in doubt, consult your research advisor. Prior to graduation each student and his/her advisor must sign the "Graduation Safety Release Form" (available towards the end of this Handbook) confirming adherence to these requirements. Finally, please complete the "Departure Form" (available towards the end of this Handbook) and an exit interview with Graduate Coordinator, Susie Marshall.

### **University Degree Requirements**

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

## CHECK LIST FOR PREPARATION OF DEFENSE

1. See GSAS guidelines at: <http://graduate.as.virginia.edu/thesis-submission-and-graduation>
2. The following information is due in the Enrolled Student Office, 110 Randall Hall, on the following dates:  
Graduate degree application – apply for Degree Application in SIS  
September 30 for January graduation  
January 31 for May graduation  
June 30 for August graduation

Thesis title (submitted to Susie Marshall at: sem8h@virginia.edu) as an attachment in Word and pdf form

Doctoral students who are graduating in the fall term must submit the title of their dissertation with the final exam form

March 15 for May graduation

Doctoral students who are graduating in the summer term must submit the title of their dissertation with the final exam form.

### Dissertation/Thesis

November 30 for January graduation

April 30 for May graduation

July 31 for August graduation

3. Consult with your research advisor for selection of a UVa faculty expert, 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.
4. Confirm a defense date with your advisor and your Doctoral Examination Committee members.
5. Reserve a room for your defense seminar and a room for your defense through Susie Marshall in Room 188.
6. Give a copy of your dissertation/thesis to each committee member at least two weeks before your defense date.
7. Announce your defense seminar to the Department by sending a copy of your abstract via e-mail to "chem-all" one week prior to your defense. Include in the e-mail the date, time and location of your seminar.
8. After your dissertation/thesis is in final form and accepted by your committee, have the Final Examination Form signed and bring to Susie Marshall in room 188. All other forms, including the Departure Form and Safety Release form, should be brought to Susie Marshall before you leave the Department
9. Upload Thesis to Digital Repository.

10. All copy charges for the dissertation/thesis are to be paid for by the student. Chemistry Department charge codes are not to be used for an expenses relating to the defense.



## 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) Get out of the lab.** Your advisor will inevitable ask you to do one more ‘quick and easy experiment’. Find a line that works for you, draw it, and stick to it. There are exceptions, such as trying to get those last elementals. This type of ‘experiment’ will not produce any ‘interesting’ results which require further study. Recommendation: **Be out of lab 3 months prior to your document date.**

**4) 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://gsas.virginia.edu/enrolled-students/thesis-submission>**

**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 you 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 a week before the graduate school deadline*. Two weeks would be a better cushion. Also, you

need to find **and out-of-department member to serve on your committee**. Your 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.** At this two week pre-defense point, talk to Susie and Dr. Harrison and see if they will clear you **to officially schedule your defense**. This issue was a volatile one when at least one person went through the process as far as when you were allowed to officially schedule, and the author's understanding is that it needs to be after your thesis/dissertation is completed and handed in to your committee. Of course, you need to schedule your defense before you know who can be on your committee (i.e. make it to the 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. This process is tough with everyone's busy schedules...good luck! If you need to dump a member, it's okay. You can find someone else in the department to help out.

**6) Confirm defense time** with committee, and tell Susie so she can **confirm it with Carruthers Hall**. She will also send you a confirmation. Proceed to the copy center on the 4<sup>th</sup> floor with your thesis/dissertation . Be prepared to pay for the copying costs for the five copies. This may take half a day or so. 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.

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. However, don't kill yourself to make it absolutely perfect. For example, if a figure runs between two pages, you can fix that at the corrections stage. Imbedding figures perfectly is difficult, so it is nice to only have to do that once. Make sure the figures are clear, but don't worry about the exact positions. Otherwise, you may have to fix it again after you make some corrections suggested by your committee.

**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** *a few days 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, which is like proposal without the pressure.** The questions are also somewhat more discussion based. 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 as an appendix. You can make copies, then feed them through the printer to put the appropriate page numbers on them. Also, make sure your margins are correct (they will measure) 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 the school and then 'X' number of personal copies (at least one for your advisor and one for yourself). Also get one extra copy of your title page and your abstract. Remember thesis paper!!

**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

## **CONGRATULATIONS!!**

## CHECK LIST FOR THESIS/DISSERTATION SUBMISSION

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

### **MARGINS**

The left hand margins **must** be 1.5"; all other margins 1" including the page numbers for both thesis and dissertations.

### **PAGE NUMBERS**

All pages are to be numbered in the upper right hand corner leaving a 1 inch margin at the top. Pages preceding text such as copyright page, abstract, dedication, etc. must be numbered using Roman Numerals.

Title Page

Title page must strictly conform to the format exemplified below.

## Title of Thesis or Dissertation

Full Legal Name  
Hometown and State

Previous degree(s), Name of University, Year of Graduation

A Dissertation (*or Thesis*) presented to the Graduate Faculty  
of the University of Virginia in Candidacy for the Degree of  
Doctor of Philosophy or Master of Arts or Master of Science or Master of Fine Arts

Department of (your department)

University of Virginia  
Month, Year Degree **will be Conferred**

## **Labels**

Each copy of thesis or dissertation must be submitted in an envelope or small box with an **electronically printed label**. **Handwritten labels are not acceptable**. The label **MUST** be typed in the following format:

NAME:

SHORT TITLE (36 characters or less including spaces) **NO more than 36**

DEGREE DATE:

DEGREE & SCHOOL:

## **EXAMPLE:**

John E. Smith

Environmental Effects of Oxygen

May 2009

M.S., G.S.A.S.

CD Submission

If you are submitting CDs instead of hard copies, you will need to submit two CDs. Each CD and each CD case will need to have an electronically printed label. You will need only one labeled envelope to submit with the two CDs. If you wish to request a bound copy for yourself, you will need to bring an additional CD for printing purposes.

## **DIGITAL FORMAT**

Documents will ONLY be 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 on the CD or it will not be accepted. The file MUST be saved as the student's name; the student's last name then first name.

## **EXAMPLE:** Smith, John E.

### Helpful Reminders

*The Alderman Copy Center hours for accepting theses and dissertations are Monday through Friday, 8:00 a.m. to 4:00 p.m.*

If your thesis or dissertation is more than 350 pages, you will be required to divide your dissertation into two volumes. The binding fee is \$17.50 per volume. The signed title page must accompany each volume along with a page designating Volume I and Volume II.

## **COLOR PAGES**

If you are having Alderman Copy Center make copies of your thesis or dissertation, you will need to make a list of the pages you want printed in color.

Remember to bring envelopes or boxes labeled for each copy you are getting printed. The Alderman Copy Center does not provide envelopes or boxes. So if you bring one copy to be submitted and you need additional copies to be made, you need an envelope and typed label for each copy.

Remember to bring an additional envelope and label for every copy you are getting printed. Printing and Copying Services cannot provide envelopes. Your thesis/dissertation is sent away for binding and will take 4-6 months to be printed and bound.

Once the school copies are bound, they both stay in Alderman Library. You are responsible for picking up any additional copies. Alderman Copy Center can mail your personal copies to you. It is \$7.00 per copy and can only be shipped to one address.

<b>FACULTY (plus email @virginia.edu)</b>	<b>RESEARCH AREA</b>	<b>ROOM</b>	<b>PHONE</b>
Ai, Huiwang, Associate Professor (ha8m)	Organic/Biological/Analytical	Pinn Hall 4020	4-5665
Bazydlo, Lindsay, Assistant Professor (lal2s)	Pathology	Old Med Sch.	4-2473
Bushweller, John, Professor (jhb4v)	Physical/Biological	Jordan 4233	3-6409
Cafiso, David S., Alfred Burger Professor (dsc0b)	Physical/Biological	188A	4-3067
Columbus, Linda, Associate Professor (lc4zs)	Physical/Biological	PLSB 106	3-2123
DuBay, Kateri, Assistant Professor (khd2t)	Physical/Biological	388C	3-2159
Egorov, Sergei, Professor (sae6z)	Physical	155	4-7690
Fraser, Cassandra L., Professor (cf4n)	Inorganic/Organic/Biological	286	4-7998
Gahlmann, Andreas, Assistant Professor (ag5vu)	Physical/Biological/Analytical	146	4-3624
Garrod, Rob, Assistant Professor (rg5qp)	Physical	151	4-0773
Gilliard, Robert, Assistant Professor (rjg8s)	Organic/Inorganic	390	297-7975
Grisham, Charles M., Professor & Assoc. Chair (cmg)	Physical/Biological	403	4-7012
Gunnoe, Brent, Professor (tbg7h)	Inorganic/Organic	242	2-2692
Harman, W. Dean, Professor and Department Chair (wdh5z)	Inorganic/Organic	404	3-3060
Harrison, A. Ian, Professor (ah8t)	Physical/ Analytical/Inorganic	154	4-3639
Herbst, Eric, Commonwealth Professor (eh2ef)	Physical	152	3-0535
Hilinski, Michael, Assistant Professor (mh6cu)	Organic	288C	4-0159
Hsu, Ku-Lung "Ken", Assistant Professor (kh4ch)	Organic/Biological/ Analytical	388A	297-4864
Hunt, Donald F., University Professor (dfh)	Organic/Biological/ Analytical	188B	3-3610
Landers, James P., Commonwealth Professor (jpl5e)	Biological/ Analytical	388B	3-8658
Lazo, John, Professor (jsl8f)	Biological	MR4-4072C	3-1936
Lehmann, Kevin, William R. Kenan Jr. Professor (kl6c)	Physical/ Analytical	149	3-2130
Macdonald, Timothy L., Professor (tlm)	Organic	288B	4-7718
Machan, Charlie, Assistant Professor (cwm5b)	Inorganic/Physical	288A	4-7997
Metcalf, David, Lecturer (dhm1h)	Physical	259C	4-7514
Morkowchuk, Lisa, Lecturer (lnm2a)		259D	4-0924
Mura, Cameron, Assistant Professor (cm5dh)	Physical	PLSB 116	4-7824
Palmer, Michael, Lecturer (mp6h)		Hotel D	2-2784
Pate, Brooks H., William R. Kenan Jr. Professor (bp2k)	Physical	207B	3-0384
Pompano, Rebecca, Assistant Professor (rrp2z)	Analytical/ Physical	148	2-1825
Pu, Lin, Professor (lp6n)	Inorganic/Organic	250	4-6953
Serbulea, Laura, Lecturer (lls3s)	Organic	259F	4-0924
Swami, Nathan, Professor (ns5h)	Inorganic/Physical/ Analytical	Thornton C218	4-1390
Venton, Jill, Professor (bjv2n)	Analytical/ Physical	PLSB 108	3-2132
Welch, Kevin, Lecturer (kdw9e)	Organic	259E	4-6316
Wheeler, Lindsay, Lecturer (lsb4u)		Hotel D	2-2816
Zhang, Sen, Assistant Professor (sz3t)	Inorganic/Physical/ Analytical	188C	4-1494

<b>STAFF</b>	<b>ROOM</b>	<b>PHONE</b>
Arrington, Charles, Organic Lab & Research Tech (cka7e)	416	4-3717
Bai, Dina, Information Tech. Specialist (Hunt Lab) (dlb6z)	206B	4-3249
Beamer, Victoria, Reimbursement & Travel Specialist (vlb2d)	207A	4-3158
Birckhead, Michael, Inventory Line Lead (mwb6e)	212	4-1421
Burton, Lin, H. R. Generalist (lgb4d)	207	4-4360
Byers, Eddie, Infrastructure Manager (ewb6h)	206	4-3157
Cropley, Cecelia, Scientific Program Administrator (cc2gg)	207A	4-3704
Dean-Clemmer, Jan, Gen. Chem. Lab. & Res Tech (jyd)	311	4-4716
Ellena, Jeff, Senior Scientist –School of Medicine (jfe)	127	4-3163
Hahm, Hueng Sik-Lab Specialist I (hh2za)	179	7-4905
Knight, Cindy, Undergraduate Programs Coordinator (csk3a)	404	4-7995
Marshall, Susan, Graduate Programs Coordinator (sem8h)	188	4-7014
Price, Carol, Biochem Instructional Lab Support Specialist (caw2n)	PLSB 120	4-7880
Reiner, Jarred, Information Technologist (jmr6j)	259	4-3077
Sabat, Michal, Crystallographer (ms5c)	MSE 101	4-7862
Scott, Debbie, Purchasing Specialist (dls9r)	212	2-2104
Shabanowitz, Jeff, Principal Scientist (Hunt Lab) (js4c)	180C	4-7994
Shifflett, Jerry, Service Technician (jas5qc)	167	4-3649
Via, Danny , Storeroom Manager (dwv8f)	212	4-6838
White, Pat, Seminar Coordinator & Admin Assistant (phw7t)	388	4-5916
<b>SERVICES</b>		
Building Maintenance	5 <sup>th</sup> Floor	4-3618
Janitorial Service	322	3-2572
Mass Spec Lab	157	4-7723
NMR Lab	105,106 4-4623	4-3163

## **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): \_\_\_\_\_

## **RESEARCH ADVISORY COMMITTEE SELECTION**

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:

FACULTY	
NAME	SIGNATURE

Chair: \_\_\_\_\_

Member 1: \_\_\_\_\_

Member 2: \_\_\_\_\_

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

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

## **GRADUATION SAFETY RELEASE FORM**

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

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

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

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

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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.A. \_\_\_\_\_ 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**

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

I. Introduction

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

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

## **II.      Request to Investigate**

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

## **III.     Investigation Procedure**

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

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

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

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

4. After meeting with the complainant, the Committee chair and one other Committee member will meet with the person accused of research misconduct (hereafter referred to as “respondent”). The respondent can be represented by legal counsel if he or she wishes to do so. The chair will provide the respondent with a brief written description of the specific nature of the suspected misconduct, but will not reveal the identity of the complainant unless the complainant has consented in advance. The chair will provide the respondent with a copy of the evidence submitted by the complainant and will inform the respondent of any significant changes in procedures which the Committee has decided to use in the case at hand. The chair will ask the respondent to provide the Committee with any written statement he or she wishes to make, and a list of all documents and witnesses which the respondent believes are relevant to the Committee’s investigation. The chair will notify the respondent of the date, time and place of the Committee’s meeting, which the respondent is invited to attend.

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

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

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

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

9. Except as otherwise specifically provided in this procedure or as required by law or regulation, all records of the Committee's proceedings will be kept confidential and not revealed to the complainant, the respondent or others. Similarly participants in the proceedings are required to treat any information, statements, or conclusions as strictly confidential.

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

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

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

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

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

Amended:  
April 27, 1994