

Virginia Commonwealth  
University  
Department Of Chemistry



**VCU**

**VIRGINIA COMMONWEALTH UNIVERSITY**

2014-2015  
Graduate Studies Handbook

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<http://chemistry.vcu.edu/wp-content/uploads/sites/3398/2013/10/Grad-Handbook-2014-2015.pdf>

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Dear Graduate Students:

Welcome to the graduate program of the Department of Chemistry at Virginia Commonwealth University. I am confident that you will find that the education you obtain at VCU will benefit you throughout your professional career and that you will find the Department an enjoyable place to work and study.

This handbook is intended to serve as a general resource for policies and procedures of the graduate Chemistry programs at Virginia Commonwealth University. Graduate Students should also refer to the VCU Graduate School Bulletin which documents the official admission and academic rules and regulations for graduate education at the university (<http://www.pubapps.vcu.edu/bulletins/graduate/>). The handbook also contains information regarding the structure of the Chemistry Department, its personnel, and their job responsibilities. I hope that this handbook will be a convenient and beneficial source for you.

The first section of the handbook provides general information, which will supplement the Graduate Rules (Section 2). Proficiency Examinations are scheduled for entering students in August and January prior to the start of classes. The results of these examinations will allow us to place new students in the appropriate level classes.

Section 2 contains the Rules of the Graduate Program. I suggest you familiarize yourself with these rules prior to your arrival. These rules are dynamic and are revised by the faculty from time to time. As changes are made, students are notified. The current rules of the Seminar Program are found in Section 3. Sections 4 through 8 elaborate other guidelines and procedures, which are important for a student's career.

I hope you will find this information useful in preparing to enter the graduate program. If you have any questions, please feel free to contact me. Once again, welcome to the Department of Chemistry and VCU.

Sincerely yours,

A handwritten signature in black ink that reads "Sarah C. Rutan" followed by a stylized flourish.

Sarah C. Rutan  
Graduate Director

# VCU Academic Calendars

V i r g i n i a C o m m o n w e a l t h U n i v e r s i t y

## August 2014

R-T	14 - 19	<a href="#">Advising</a> and <a href="#">registration</a> – <b>Monroe Park</b> campus
F	15	<a href="#">Orientation</a> for new graduate students
Sa-Sn	16 - 24	<a href="#">Welcome Week</a>
T	19	New Student Convocation
W	20	Opening Faculty Address and Convocation
R	21	Fall classes begin
R-W	21 - 27	Add/drop and late <a href="#">registration</a>
W	27	<b>Deadline</b> for dean/departmental offices to submit all approved undergraduate <a href="#">change of major</a> requests effective for the fall 2014 semester

## September 2014

M	1	University closed
F	5	<b>Deadline</b> for students to provide advance written notification to instructors of intent to observe religious holidays*
F	5	<b>Monroe Park</b> campus students - <b>last day</b> for fall degree candidates to submit <a href="#">graduation applications</a> to their advisers for December degrees <b>MCV</b> campus students - fall degree candidates should follow departmental deadlines
F	19	<b>Last day</b> for undergraduate grades of incomplete to be converted from spring semester or summer sessions

## October 2014

R-F	16 - 17	Reading days, no day or evening classes held – <b>Monroe Park</b> campus
M-F	20 - 24	<b>Monroe Park</b> campus students - <a href="#">advising</a> for spring semester <b>MCV</b> campus students - follow departmental advising schedule
F	31	<b>Last day</b> to <a href="#">withdraw</a> from a course with a mark of "W" – both campuses (except for courses not scheduled for the full semester)

## November 2014

M	3	Spring semester advance <a href="#">registration</a> begins
T	11	Veterans Day - University open - Classes in Session Honor American Veterans of all Wars - <a href="#">Learn more</a> about Veterans Day
R-Sn	27 - 30	University closed - evening classes (classes beginning at 4 p.m. or later) do not meet on Nov. 26
Sa	6	<b>Last day</b> of classes for fall semester – both campuses

## December 2014

M-F	8 - 12	Final examinations for fall semester – <b>MCV</b> campus
M-Sa	8 - 13	<a href="#">Final examinations</a> for fall semester – evening classes
M-T	8 - 16	<a href="#">Final examinations</a> for fall semester – <b>Monroe Park</b> campus
F	12	Final date for graduate dean’s approval signature on completion of graduate <a href="#">thesis/dissertation</a> for December degree candidates (check with graduate program director regarding internal schedules for submission of copy, defense and school/college dean approval)
F	12	Final date for submission of thesis/dissertation to the <a href="#">VCU Digital Archives</a>
Sa	13	December <a href="#">Commencement</a>
Sa	20	Official date for certifying December diplomas
Sa-Sn	20 - Jan 4	University closed**
M	29	Holiday <a href="#">intersession</a> classes begin
W	31	<b>Deadline</b> for students to provide advance written notification to instructors of intent to observe religious holidays – holiday intersession*

## January 2015

Sa-Sn	Dec 20 - Jan 4	University closed
T-R	6 - 8	<a href="#">Orientation</a> for new freshmen, transfer and readmitted students – <b>Monroe Park</b> campus
T-F	6 - 9	<a href="#">Advising</a> and <a href="#">registration</a> – <b>Monroe Park</b> campus
Sa	10	Holiday intersession classes end
M	12	Spring classes begin
M-Sn	12 - 18	Add/drop and late <a href="#">registration</a>
F	16	<b>Deadline</b> for dean/departmental offices to submit all approved undergraduate <a href="#">change of major</a> requests effective for the spring 2015 semester
M	19	University closed
F	23	<b>Monroe Park</b> campus students - <b>last day</b> for spring degree candidates to submit <a href="#">graduation applications</a> to their advisers for May degrees. <b>MCV</b> campus students - spring degree candidates should follow departmental deadlines.
F	23	<b>Deadline</b> for students to provide advance written notification to instructors of intent to observe religious holidays*

## February 2015

T	10	<b>Last day</b> for undergraduate grades of incomplete to be converted from fall semester
Sn-Sn	8 - 15	Spring break for both campuses

### March 2015

F	20	<b>Last day</b> to <a href="#">withdraw</a> from a course with a mark of "W" – both campuses (except for courses not scheduled for the full semester)
M	23	Summer semester advance <a href="#">registration</a> begins
M-F	23 - 27	<b>Monroe Park</b> campus students - <a href="#">advising</a> for fall semester <b>MCV</b> campus students - follow departmental advising schedule
M	30	Fall semester advance <a href="#">registration</a> begins

### April 2015

T	28	<b>Last day</b> of classes for spring semester – <b>Monroe Park</b> campus; evening classes continue through May 2
W	29	Reading day, no day classes held – <b>Monroe Park</b> campus
R-F	30 - May 8	<a href="#">Final examinations</a> for spring semester – <b>Monroe Park</b> campus

### May 2015

F	1	<b>Last day</b> of classes for spring semester – <b>MCV</b> campus
M-F	4 - 8	Final examinations for spring semester – <b>MCV</b> campus
M-Sa	4 - 9	<a href="#">Final examinations</a> for spring semester – evening classes
F	8	Final date for graduate dean's approval signature on completion of graduate <a href="#">thesis/dissertation</a> for May degree candidates (check with graduate program director regarding internal schedules for submission of copy, defense and school/college dean approval)
F	8	Final date for submission of thesis/dissertation to the <a href="#">VCU Digital Archives</a>
Sa	9	May <a href="#">Commencement</a>
Sa	16	Official date for certifying May diplomas

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\* Reasonable accommodations for completion of work missed should be made for students observing religious holidays.

Chemistry Faculty Directory

<i>Name</i>	<i>Phone</i>	<i>Office</i>	<i>Bldg</i>	<i>Email</i>
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<b>DEPARTMENTAL ADMINISTRATIVE OFFICES/FACILITIES</b>				
CHEMISTRY Office (Main)	8-1298 (1) 8-8599 (FAX)	3041	OLVPH	chemistry@vcu.edu
MAILROOM/COPIER Office	NONE	3053	OLVPH	NONE
FISCAL Office Copier Room	7-0248 (FAX)	2050	OLVPH	NONE
CHEMISTRY Stockroom	8-7501 (05)	3054	OLVPH	NONE
CHEMISTRY Computer Lab	NO PHONE	3303	TEMPL	NONE
CGSO (Grad Student Organization Lounge)	NO PHONE	3309 A&B	TEMPL	President: Sean Platt plattsp@vcu.edu
GRADUATE TA Office #1 (Computer/Printer)	NO PHONE	2071	OLVPH	

GRADUATE TA Office #2	NO PHONE	2073	OLVPH	
GRADUATE TA Office #3	NO PHONE	2075	OLVPH	
GRADUATE TA Office #4	NO PHONE	2076	OLVPH	
MCV CAMPUS-GTA Office	8-7510	2072	OLVPH	David <b>Hacker</b> (hackerde@vcu.edu) Jonathan <b>Sheldon</b> (sheldonje@vcu.edu) Patrick <b>Dupart</b> (dupartps@vcu.edu) Emil <b>Iqbal</b> (iqbales@vcu.edu)
VACANT Office Space-Oliver	8-0915	2070	OLVPH	NONE
VACANT Office Space-Temple	7-0818	4429-0 (Outer)	TEMPL	NONE

### DEPARTMENTAL LAB FACILITIES

GENERAL CHEM PREP Lab	8-8031	2036	OLVPH	GEN CHEM COORDINATOR: Joseph Topich jtopich@vcu.edu
INSTRUMENTATION Lab	8-7540	4010	OLVPH	Director: Joseph Turner jturner9@vcu.edu
MASS SPECTROMETRY Lab	8-7487 8-7445 (lab)	1076	OLVPH	Director: Kristina Nelson/Tech: Kevin Knitter ktnelson@vcu.edu or ksknitter@vcu.edu
NMR Lab	7-0651	3304	TEMPL	Director: Yun Qu yqu@vcu.edu
ORGANIC PREP Lab	8-7075	1029	OLVPH	ORG CHEM COORDINATOR: Meredith Moses Immoses@vcu.edu
P-CHEM Lab		2079	OLVPH	
QUANT/ INORGANIC Lab		1013	OLVPH	
<b>Technology Offices</b>				
Humanities & Sciences Tech (HASTECH)	8-6180	Basement	701 W. Grace	hastech@vcu.edu
Media Support Services	8-1098		Cabell Library	NONE

**DEPARTMENT OF CHEMISTRY**  
**VIRGINIA COMMONWEALTH UNIVERSITY**  
**GRADUATE STUDENT HANDBOOK**  
**2014-2015**

Scott Gronert, Chair

Sarah C. Rutan, Graduate Director

# VIRGINIA COMMONWEALTH UNIVERSITY

## Graduate Program in Chemistry

This handbook serves as a supplement to the Graduate Rules and provides clarification of the Department's policies and procedures. If you have any questions about a particular rule or encounter an issue which is not covered in this booklet, check with Dr. Rutan.

### 1. General Program Information

The Chemistry Department has compiled the following information to aid applicants and students in understanding the nature and requirements of the graduate program for the M.S. and Ph.D. degrees. This document is located at

<http://chemistry.vcu.edu/wp-content/uploads/sites/3398/2013/10/Grad-Handbook-2014-2015.pdf>

Additional information concerning graduate study may be obtained from the Graduate Bulletin of Virginia Commonwealth University <http://www.pubapps.vcu.edu/Bulletins/graduate/>. Questions should be addressed to the Chair, Department of Chemistry, P.O. Box 842006, Virginia Commonwealth University, Richmond, Virginia 23284-2006, (804) 828-1298.

#### A. Degree Programs

Virginia Commonwealth University offers programs leading to the Doctor of Philosophy and Master of Science degrees in analytical, inorganic, organic, physical and, in cooperation with the Department of Physics, to the Doctor of Philosophy degree in chemical physics. A plan of study is worked out individually for each student. In keeping with the University's commitment as an urban institution, the department also offers part-time programs leading to the Master of Science degree and Doctor of Philosophy degree.

#### B. Financial Assistance

Graduate students in the Chemistry Department may receive financial support by means of a teaching assistantship (TA), a research assistantship (RA), a fellowship or a scholarship. Students receiving financial support from the University may not hold outside employment without the written permission of the Chair of the Chemistry Department. In order to continue to receive financial support it is necessary that the student maintain good standing and be making satisfactory progress toward a degree. (See the Graduate Bulletin <http://www.pubapps.vcu.edu/Bulletins/graduate/?uid=10045&iid=30054>)

Graduate students who are teaching assistants are required to perform teaching duties in recitation sections and in laboratory sections and related duties as assigned by the Assistant Chair. These duties are carried out under the direction of faculty who are assigned to supervise the teaching of that particular course.

Research assistants perform duties in the research laboratories of faculty members who have financial support of their research either from the University or from an outside agency.

There are a limited number of fellowships available through the Chemistry Department. Information concerning fellowships, loans, and other types of financial aid may be obtained from the Chemistry Department Graduate Director. These fellowships are generally

awarded by the Graduate Director in consultation with the Graduate Evaluation and Advising Committee (GEAC).

All financial aid is awarded on an academic year basis of nine months unless otherwise stated. The beginning date for teaching assistants, research assistants and fellows is August 10th unless otherwise stated. The Graduate Bulletin and the Undergraduate Bulletin of VCU should be consulted for the specific date for the beginning of classes.

Financial assistance for the summer is usually available and students requiring support for the summer months should consult with their research advisor or the Graduate Director during the Spring Semester. The department rules for awarding available financial support to graduate students are as follows:

1. A student who enters the graduate program with a bachelor's degree and who seeks the M.S. degree on a full-time basis may anticipate support from the department (either TA or RA) for a maximum period of **TWO CALENDAR YEARS PLUS ONE SEMESTER**, provided they are making satisfactory progress towards their degree.
2. A student who enters the graduate program with a bachelor's degree and who seeks the Ph.D. degree or who continues without interruption from the M.S. to the Ph.D. program on a full-time basis may anticipate support from the department (either TA or RA) for a maximum period of **FIVE CALENDAR YEARS**, provided they are making satisfactory progress towards their degree.
3. A student who enters the graduate program with a master's degree and who seeks the Ph.D. degree on a full-time basis may anticipate support from the department (either TA or RA) for a maximum period of **FOUR CALENDAR YEARS**, provided they are making satisfactory progress towards their degree. (This assumes that only two courses from the previous degree will transfer to VCU).
4. Students seeking additional support beyond the above period for any reason shall petition the faculty for each additional semester of support no later than mid-term of the final semester of support.
5. Stipends for teaching assistants and research assistants may vary depending upon assignment, experience, quality of performance and degree sought.

## 2. Proficiency Examinations

Each student entering the graduate program with an undergraduate degree in chemistry shall take proficiency examinations in the four areas of chemistry: analytical, inorganic, organic and physical chemistry. These examinations will be offered to incoming students at the time of admittance to the program (August or January). The examinations are the standardized ACS examinations and will be graded with a score of 2, 1 or 0. If a student receives a score of 2, they are considered to be proficient in that area. A score of 1 indicates that the student is deficient in some area of the subject, yet they have enough knowledge to take the graduate level course to clear the deficiency. A score of 0 indicates a severe deficiency in the undergraduate material, so the student will be required to take the undergraduate course to clear the deficiency. The following table indicates the coursework required for a given score in each area.

Area	Score of 1	Score of 0
Analytical	Three credits of graduate analytical courses	CHEM 409
Inorganic	CHEM 620	CHEM 406
Organic	CHEM 504	CHEM 301 and/or 302
Physical	CHEM 510 or 511**	CHEM 510 or 511**

\*Students who have not completed the undergraduate or equivalent course(s) in any of the four areas will be expected to take the corresponding undergraduate course for credit. A B or better in that class will be considered to clear the deficiency. Students with poor grades in their undergraduate classes may be required to take additional courses beyond those listed above to clear the deficiency.

\*\*CHEM 510 or 511 will be recommended by GEAC depending on the student's performance on the corresponding section of the proficiency exam.

Students entering the chemical physics program must pass proficiency examinations in two areas of chemistry and two areas of physics (mechanics; electricity and magnetism). Students entering with a bachelor's or master's degree in chemistry who have not taken the physics courses previously can satisfy the physics requirement with "A"s or "B"s in PHYS 301, 302 (classical mechanics), and 376 (electromagnetism). Students entering with a bachelor's or master's degree in physics who have not taken the chemistry courses previously may satisfy the chemistry requirement with "A"s or "B"s in two of four courses, CHEM 301-302 (organic chemistry; the two semester sequence counts as one course only), CHEM 320 (inorganic chemistry), CHEM 409 (instrumental analysis) or CHEM 510 (atomic and molecular structure).

There is no official record on the student's transcript of the performance on the proficiency examinations.

### 3. Advising

#### A. Advising of New Graduate Students

The Graduate Evaluation and Advising Committee (GEAC) will act as advisor for all entering graduate students. The committee, after consideration of the results of the proficiency examinations and in consultation with the student, will plan a course of study for the first year of graduate work. The committee will follow closely the progress of each student and provide counseling until a research advisor is chosen. At the end of the fall and spring semester, the progress of all graduate students will be reviewed and evaluated by the graduate director and GEAC. Results in course work, performance in research, and performance on examinations will be considered. Based upon the results of these evaluations, students will be recommended either to continue or to terminate their graduate studies. It is the responsibility of each graduate student, full-time or part-time, to make an appointment to talk with the graduate director during the registration period at the start of each semester until a research advisor is chosen.

The rules regarding the performance of all graduate students in courses are as follows:

1. A student seeking a M.S. or Ph.D. degree must have a "B" average in graduate academic courses. A "B" average in course work excludes seminar and research grades.

2. A student who receives a grade below "B" in any graduate course will be reviewed by the Graduate Evaluation and Advising Committee and will receive a letter of warning from the Graduate Director.
3. The status of a student who receives any grade below "S" in research will be reviewed by the GEAC, in consultation with the research advisor, and a plan for correcting the deficiency will be devised. Additional grades in research below "S" may lead to dismissal from the program.
4. A student earning three grades below "B" in approved graduate courses during the first year of graduate study will be dismissed from the program. A student who earns a third grade below "B" in an approved graduate course after the first year of graduate study will be reviewed and may be dismissed from the program. If the student is seeking the Ph.D. degree, he or she may be permitted to complete the M.S. degree at the discretion of the faculty. In any event, a student must have no more than six credit hours or 20 percent of total credit hours attempted (whichever is greater) at "C" or below level ("C," "D," "F"). Students who receive any grade of "D" or "F" will be reviewed for possible dismissal.
5. A student may achieve a "B" average by:
  - i. earning sufficient grades of "A" in other approved graduate courses or
  - ii. taking recommended\* additional graduate courses beyond what is required and earning a grade of "B" or better.

\*The Graduate Evaluation and Advising Committee will determine which course(s) may be used to correct deficiencies and when such courses are to be taken.

To maintain satisfactory progress in the program, a graduate student may not withdraw from a course without the permission of the Graduate Evaluation and Advising Committee. A student seeking permission to withdraw from a course should petition the GEAC in writing prior to the official withdrawal date. The GEAC must receive a written evaluation of the student and recommendation about the petition from the course instructor prior to reaching a decision. Withdrawal without permission of the GEAC may jeopardize financial support and/or continuance in the graduate program.

## **B. Selection of a Research Advisor**

Each faculty member will present his or her research interests to the entering graduate students at a session to be scheduled every fall semester. Students should then arrange individual sessions with those faculty members in whose research the student is interested to discuss potential research projects. In addition, all graduate students entering in the fall semester are required to attend the poster session held during the fall semester. These posters are presented by current graduate students (second year and above) and allow the new student to obtain an overview of the research being conducted in the chemistry department. This information will allow the student to make decisions regarding both research and committee selection. The poster presentations will serve to fully integrate the student within the department as well as to provide valuable professional insights that will be useful during the student's tenure in graduate school and beyond. If a student is unable to attend the poster presentation, then they will be required to schedule individual meetings with representative faculty members (at least 75%) from each of the four divisions and obtain their signatures. Upon completion of these meetings,

the student should select a research advisor, secure the potential advisor's signature and turn in the completed form to the Graduate Director. Students who begin their studies in the fall semester should submit this form by December 15; students who begin their studies in the spring semester should submit this form by April 15. The Graduate Director shall consult with the Chair who will have final approval of the choice of research advisor, taking into account the guidelines in the next paragraph. The student and advisor will be notified of the approval within two weeks of submission of the selection form.

A tenured faculty member can accept a graduate student as a research student

- \* if extramural support for research is either available or being sought by that faculty member, and
- \* if no more than two graduate students in that research group would then be supported by Departmental, College or University funds.

Upon selecting a research advisor all students must enroll in at least one semester hour of research, CHEM 697 (or PHYS 697 if appropriate), each semester during the academic year until the completion of the degree sought.

### **C. Committee Selection**

For both the Ph.D. and M.S. seeking student, the research advisor in consultation with the student shall appoint a committee that is composed of at least four members including the research advisor. This committee selection should be constituted by the end of the first summer of research. One member of the committee must be from outside the chemistry department, and one member must be from outside of the division. For students in the Chemical Physics track, members of the Physics Department are to be considered as members of the Chemistry Department and may not serve as the outside member. The names of the committee members must be submitted to the Graduate Director for approval. The Graduate Director will appoint a tenured faculty member other than the research advisor as Chair of the thesis or dissertation committee.

A student seeking an M.S. degree should meet formally with their committee approximately 8-12 months prior to the intended date for defense of the thesis. The purpose of this meeting is to allow the student to present a research plan and outline of work completed to their committee members. The committee may then provide guidance and a course of action prior to completion of the degree.

A Ph.D. student will meet with their committee as part of the oral candidacy examination. In some cases, the student may pass the oral candidacy examination; however, the committee may require future updates of the student's research progress. It is the responsibility of the student and the faculty advisor to schedule and hold these meetings at the agreed upon date, in order to fully satisfy the oral candidacy examination requirement.

The student is encouraged to consult any faculty member, including faculty not on their committee, concerning problems arising in the course of their research.

### **D. Registration for Courses**

Entering students will meet with the GEAC prior to registration, to schedule courses for the upcoming semester. After advising by the GEAC, graduate students may register online. Students should have a VCU identification card and student ID number in order to register.



## 4. Graduate Department Committees

### A. Graduate Recruiting and Admissions Committee (GRAC)

Responsible for: recruiting new graduate students; reviewing applications for admission to the graduate program in chemistry and making recommendations on these applications to the Graduate Director for action; preparing recruiting posters and brochures; arranging for visits of potential graduate students; evaluating transfer credit for courses taken at other universities and making recommendations to the Graduate Director and GEAC regarding such credit.

### B. Graduate Evaluation and Advising Committee (GEAC)

Responsible for: advising and scheduling courses for first year graduate students and upper level graduate students who have not chosen a research advisor; reviewing graduate student petitions for withdrawal from courses or exceptions to the Graduate Rules and making recommendations on these petitions to the faculty and Graduate Director; reviewing applications for Department and University fellowships and making recommendations for awards to the faculty; reviewing graduate student records and grades and making recommendations to the Chair, Graduate Director, and/or faculty, as appropriate, regarding graduate student academic problems; considering change of status applications (enrolled students changing from MS degree goal to Ph.D.). Students desiring to effect this change must be in good standing with a GPA of at least 3.00 and must not have been previously restricted to the M.S. level. Students should submit a request to GEAC, including unofficial transcripts and two letters of reference to the GEAC to be considered for a change from the M.S. to the Ph.D. program.

### C. Graduate Director

Responsible for: coordinating efforts of GRAC, GEAC, and other departmental committees involving the graduate program; scheduling dates and times for Proficiency and Cumulative Examinations and reporting the results of these exams to the faculty and students; reviewing and approving thesis and dissertation committees; scheduling thesis, oral candidacy, and dissertation defenses; assigning, in consultation with the GRAC, Graduate Research Awards; reviewing graduate student teaching and research evaluations and reporting problems to the faculty and/or GEAC; writing letters of warning for academic problems to the graduate students; acting as liaison between the graduate students and Departmental and University committees and administration.

## 5. Features of the Program

### A. Requirements – Doctor of Philosophy Degree

The awarding of the Ph.D. degree is not based solely upon the completion of a definite number of credit hours, but rather upon the accomplishments of the student in research, in course work, in individual examinations, and on the dissertation. Requirements in detail are indicated below. Students seeking an exception to the graduate requirements must present their case to the members of the Graduate Evaluation and Advising Committee. If a majority of the committee agrees to support the appeal, they will present it to the faculty for departmental consideration.

Students desiring to include a chemical education component in their research will choose two advisors, one in the cognate area and one in the area of chemical education. Cumulative exams will be taken in their chosen cognate area (physical, analytical,

inorganic, organic, chemical physics) and in chemical education, in consultation with his/her advisors. Students with this focus will be expected to publish their results in both their cognate area and in the area of chemical education. All formal requirements for the degree are otherwise the same as for any doctoral student.

## 1. Course Requirements

The student seeking the Ph.D. Degree in Chemistry must have a minimum of 18 credit hours in eight didactic graduate courses not including credit for seminar (CHEM 690 or 692), research (CHEM 697) or CHEM 693 Chemistry Perspectives and Ethics. Six of these graduate classes must be courses offered by the Department of Chemistry. The Graduate Recruitment and Admissions Committee will review the transcript of all transfer students. (See the Graduate Catalog for the University rules for transfer credit.) The credit hours must include three of the following core courses (9 credits) selected from the following four areas:

Analytical	Three credits of graduate analytical courses
Inorganic	CHEM 620
Organic	CHEM 504
Physical	CHEM 510 or 511**

\*\*CHEM 510 or 511 will be recommended by GEAC depending on the student's performance on the corresponding section of the proficiency exam.

Students in the chemical physics program are required to complete CHEM 510 or PHYS 580 plus CHEM 511, CHEM 612, PHYS 576, and PHYS 641 plus three courses from the following list: CHEM 512, 550, 591, 610, 611, 615, 616, 620, 634, 635, 691; PHYS 550, 571, 573, 591, 661, 691; MATH 517, 518; NANO 650, 651. A minimum of four graduate courses must be in chemistry.

All graduate students seeking the Ph.D. degree must complete 30 hours of CHEM 697, Directed Research, as a part of fulfilling the requirements for the degree. Students electing the chemical physics option may substitute 15 credits of PHYS 697 for 15 credits of CHEM 697. All course work for the student will be determined in consultation with the research advisor and with the approval of the Graduate Evaluation and Advising Committee.

All full and part-time graduate students will enroll each semester in CHEM 690, Research Seminar in Chemistry, except during the semester that the student is presenting their literature seminar or thesis/dissertation seminar, when they should register for CHEM 692, Chemistry Seminar Presentation. All Ph.D. students are required to take CHEM 693 Chemistry Perspectives and Ethics in their first year enrolled as an admitted graduate student in chemistry. In addition, all Ph.D. students are required to enroll in CHEM 698, Investigations in Current Chemistry Literature (0.5 credit) twice during the course of their graduate studies, including the semester preceding their literature seminar presentation. Up to two credits may be presented toward didactic course graduation requirements to count as one course.

Students desiring to include a chemical education component in their research will choose two advisors, one in the cognate area, and one in the area of chemical education. All formal requirements for the degree are otherwise the same as for any doctoral student.

## 2. Cumulative Examinations

The student seeking the Ph.D. degree must satisfactorily complete the written cumulative examinations in six consecutive attempts. The examinations will be offered in analytical, inorganic, organic and physical chemistry, and in chemical physics. The examinations will be offered six times during the academic year in the months of September, October, November, February, March and April, and will be graded on a scale of 2, 1 or 0 points. Students must achieve a total of five points to complete this requirement, of which three points must be obtained on examinations in the student's major area of interest. Students must also pass a minimum of two examinations with scores of two points each. The examinations will be no more than three hours in length and major topics for each division's examination may be announced no later than one week prior to the date of the examination at the discretion of the division. Students must sign up for the exam they intend to take by Monday noon of the week of the exam. There may be examinations where the division chooses not to announce the topic. The topics may include material from the current literature, recent seminars in the area, course related topics, and topics which are not covered in a specific course within the department.

The examinations may be taken only after successful completion of the proficiency requirements. Thus, some students begin the cumulative examinations at the beginning of their second semester of residency and, in any case, no later than the beginning of their third semester of residency. Any student who wishes to delay beginning the cumulative exams past the third semester of residency must request permission from the Graduate Director. Any unexcused absence from taking a cumulative exam will count as 0 points.

Part-time students shall also be required to follow this schedule.

Students who do not pass the cumulative exam requirement will be restricted to an M.S. degree.

## 3. Oral Candidacy Examination

By the end of the fifth semester of residency, the student will submit one copy of an original Dissertation Research Proposal based upon their proposed research project, to each member of their dissertation committee. The dissertation committee may decide to return the proposal to the student if deficiencies exist prior to the examination. The Oral Candidacy Examination should be scheduled no later than the end of the first month of the sixth semester of residency and completed no later than six months prior to defense of the dissertation.

Students who do not follow the timeline for the oral candidacy exam will be restricted to an M.S. degree.

The proposal consists of the problem and its proposed solution which has been developed by the student according to the following rules:

- a. The literature must be searched thoroughly to assure that the proposal is original and has not been reported previously.

b. Pertinent examples in the literature bearing on the feasibility of the proposed solution should be cited.

c. The report shall include:

- (1) An Introduction (giving the background and known facts on which the problem is based)
- (2) A Statement of the Problem (giving a description of the problem, its significance and the proposed experimental approach)
- (3) A Work Completed Section (describing research completed to date)
- (4) A Methods Section (describing the steps to be carried out, discussion of feasibility, and possible outcome)
- (5) A Conclusion Section (describing the interpretation of possible experimental results and their bearing on the original hypothesis)
- (6) A section of Bibliographic References (in a style acceptable for a dissertation)

It is also suggested for the student to review the guidelines for preparation of NSF and NIH proposals for guidance. At the time of the oral examination, the student will be asked to explain the problem and to defend the proposed solution. It is presumed that a major portion of the questions in the examination will concern some facet of the proposal; however, questions may not be restricted to such areas.

A favorable decision of the Dissertation Committee with no more than one negative vote (all members being required to vote) shall be required to pass the oral portion of the candidacy examination. If a student fails the oral candidacy examination, a reexamination may be given.

The oral candidacy examination is open to all members of the graduate faculty. Faculty members in attendance may ask questions of the candidate, but their questions shall not be presented until after the dissertation committee has completed its questions. Faculty members other than those on the committee shall neither vote nor indicate on the success or failure of the candidate. The time and place of the examination shall be posted at least seven days in advance. It is the responsibility of the graduate student to inform the Graduate Director of the time, date and title of the proposal defense. As stated previously, this examination must be successfully completed at least six months before submission of the dissertation. Upon successful completion of the oral candidacy examination, the student becomes a candidate for the Ph.D. degree.

Once the oral candidacy examination has been passed, and the student has completed all required course work (with a 3.0 GPA) and the literature seminar, the student must fill out and submit to the Graduate Director the [Application to Candidacy Form](#).

#### 4. Dissertation

The candidate must conduct a substantial original investigation under the supervision of the research advisor and prepare a dissertation reporting the results of the research and analyzing its significance in relation to existing scientific knowledge. Guidelines for preparation of the thesis can be found on the Graduate School website:

<http://www.graduate.vcu.edu/community/thesis.html>

When the advisor and the candidate determine that sufficient research has been completed to prepare a dissertation, a meeting of the candidate's committee will be scheduled to review the completed work. The committee will then recommend that the

candidate begin preparation of the dissertation or complete additional research. Since the Ph.D. is awarded for completion of an original research problem, evidence (at minimum, a draft manuscript) of publication of the results of this work should be presented to the committee at this meeting. This meeting will occur at least six months prior to the anticipated defense date, and the result will be reported to the Graduate Director.

When the dissertation has been completed and the advisor considers it acceptable and all the Ph.D. Degree requirements have been satisfied, the candidate so notifies the Graduate Director of the examination date. Copies of the dissertation in acceptable form and style are to be submitted to the dissertation committee.

The examiners for the dissertation are the student's dissertation committee members. These examiners decide upon the acceptability of the candidate's dissertation for defense. An external examiner may be invited to participate in the dissertation thesis examination by reason of specific expertise in the candidate's field. Upon tentative acceptance of the dissertation by the examiners, the candidate appears before them for a final oral examination. This examination is open to all members of the graduate faculty. The final examination will be limited to the subject of the candidate's dissertation and related matters. A favorable vote of the candidate's examiners, with no more than one negative vote shall be required for passing the final oral examination. There shall be prior public announcement of the candidate's name and department and title of dissertation at least seven days in advance. It is the responsibility of the graduate student to inform the Graduate Director of the time, date and title of the dissertation defense. Upon successful defense of the dissertation, the dissertation is to be corrected and submitted to the library via the electronic dissertation procedure (<http://www.graduate.vcu.edu/community/thesis.html>).

The doctoral dissertation must be sent to ProQuest (formerly UMI) for microfilming and publication of the abstract of the dissertation in "Dissertation Abstracts International." Information pertinent to the preparation of the dissertation and the procedures for electronic publication of the dissertation can be found in the

[Thesis and Dissertation Manual](#)

The candidate, having fulfilled all the requirements for the degree of Doctor of Philosophy, is recommended to the graduate faculty, general faculty, and the President of the University for the degree to be awarded.

## **5. General Progress in Study and Research**

It is deemed feasible for a well-prepared, full-time student commencing graduate studies with a bachelor's degree in chemistry to complete the Ph.D. requirements in four and one-half to five years. It is expected that the first academic year will be devoted primarily to course work; the effort of subsequent years should be divided between research, the completion of course work and required examinations, and preparation of the dissertation. Virginia Commonwealth University requires that all graduate degree requirements be completed within eight years from the date of admission to graduate study. This time limitation applies to both full and part-time students.

It is highly desirable that a good start is made on the research project during the summer after the first year, and that research be continued even while courses are in progress during the second year.

It is considered desirable that the student be present as much as possible at the University. Students should conduct research whenever course work and teaching duties allow.

## B. Requirements – Master of Science Degree

The awarding of a M.S. Degree depends upon the accomplishments of the student in research, coursework, individual examinations, and on the thesis. Requirements in detail are indicated below. If a student seeks an exception to the graduate requirements, the student must present their case to the members of the Graduate Evaluation and Advising Committee. If the committee, by a simple majority, agrees to support the appeal, they will present it to the faculty for departmental consideration.

### 1. Course Requirements

Candidates for the M.S. Degree are expected to have earned at least 12 semester credit hours in research and a minimum of 15 credit hours in six didactic graduate courses, not including credit for seminar (CHEM 690 or 692), research (CHEM 697) or CHEM 693 Chemistry Perspectives and Ethics. The Graduate Recruitment and Admission committee will review the transcript of all transfer students and make recommendations to the chemistry faculty regarding the credits to be accepted in transfer (See the Graduate Catalog for the University rules for transfer credit.)

The credit hours include three of the following core courses (9 credits) selected from the following four areas:

Analytical	Three credits of graduate analytical courses
Inorganic	CHEM 620
Organic	CHEM 504
Physical	CHEM 510 or 511**

\*\*CHEM 510 or 511 will be recommended by GEAC depending on the student's performance on the corresponding section of the proficiency exam.

The student will complete at least one additional course in his/her area of specialization and at least 12 hours of CHEM 697. Any other necessary course work for the student will be determined in consultation with the research advisor and with the approval of the Graduate Evaluation and Advisory Committee.

All full and part-time graduate students will enroll each semester in CHEM 690, Research Seminar in Chemistry, except during the semester that the student is presenting their literature seminar or thesis/dissertation seminar, when they should register for CHEM 692, Chemistry Seminar Presentation.

All Master of Science students are required to take CHEM 693 Chemistry Perspectives and Ethics Perspectives in their first year enrolled as an admitted graduate student in chemistry. In addition, all M.S. students are required to enroll in CHEM 698, Investigations in Current Chemistry Literature (0.5 credit) twice during the course of their graduate studies, including the semester preceding their literature seminar presentation. Up to two credits may be presented toward didactic course graduation requirements to count as one course.

Once the student has completed all required course work (with a 3.0 GPA) and the literature seminar, the student must fill out and submit to the Graduate Director the [Application to Candidacy Form](#).

## 2. Research and Thesis

Each student conducts a research study under the guidance of the thesis advisor. Guidelines for preparation of the thesis can be found on the Graduate School website:

<http://www.graduate.vcu.edu/community/thesis.html>

When the advisor and the student determine that sufficient research has been completed to prepare a thesis, a meeting of the student's committee will be scheduled to review the completed work. The committee will then recommend that the student begin preparation of the thesis or complete additional research. This meeting will occur at least six months prior to the anticipated defense date, and the result will be reported to the Graduate Director.

When the thesis has been completed and the advisor considers it acceptable and all the M.S. degree requirements have been satisfied, the candidate so notifies the Graduate Director of the examination date. This date must be at least one month prior to the deadline for completion of all degree requirements. Four copies of the thesis or more as required, in acceptable form and style are to be submitted to the thesis committee.

Upon approval of the thesis by the advisor, the student submits four or more copies as required to the thesis committee. The thesis is examined by the student's thesis committee. An external examiner may be selected by reason of special knowledge and distinction in the field of the candidate's work. On tentative approval of the thesis, the student appears for a final oral examination by the thesis committee. The final examination will be limited to the subject of the candidate's thesis and related matters. A favorable vote of the candidate's examiners, with no more than one negative vote shall be required for passing the final oral examination. The final examination shall be open to the faculty and its time and place, together with the candidate's name, department and title of thesis, shall be announced at least seven days in advance. It is the responsibility of the graduate student to inform the Graduate Director of the time, date and title of the thesis defense. Upon successful defense of the thesis, the thesis is to be corrected and submitted to the library via the electronic dissertation procedure.

Unlike the dissertation, VCU does not require master's theses publication with ProQuest; however, the service is available to those desiring it. Theses are submitted directly by the student through [UMI/ProQuest's ETD Administrator site](#) for VCU

Information pertinent to the preparation of the thesis and the procedures for electronic publication of the thesis can be found in the

[Thesis and Dissertation Manual](#)

The student having fulfilled all the requirements for the degree of Master of Science, is recommended to the graduate faculty, general faculty, and the President of the University for the degree to be awarded.

## 3. General Progress in Study and Research

It is deemed feasible for a well-prepared, full-time student commencing graduate studies with a bachelor's degree in chemistry to complete the M.S. requirements in two and one-half years. It is expected that the first academic year will be devoted primarily to course work; the effort of the second year will be divided between research and the completion of course work. It is essential that considerable progress be made on the

research project during the summer after the first year. Virginia Commonwealth University requires that all graduate degree requirements be completed within a maximum of six years from the date of admission to graduate study. This time limitation applies to both full and part-time students.

It is considered desirable that the student be present as much of the time as possible at the university. Students should conduct research whenever course work and teaching duties allow.

### **C. Poster Presentations**

All graduate students (second year and above) are required to present a poster on their research at a poster presentation held every fall semester. The research progress of each graduate student will be evaluated by faculty members during the presentation. All first year graduate students must attend the poster presentation.

#### **1. Guidelines**

- A. All graduate students must have chosen their committee members and provided the names to the Graduate Director for approval by the end of the first summer in residence.
- B. Posters must be no larger than the board size provided (3'x4').
- C. Students will be required to orally present background material and their results to all graduate committee members for discussion.

#### **2. Graduate Committee Evaluations:**

- A. The research progress of graduate students will be evaluated by their graduate committee members.
- B. The completed evaluation forms for each student will be sent to GEAC.
- C. The GEAC will evaluate the forms and provide a recommendation on the student's progress. The recommendation will then be forwarded to the graduate committee members, the student and the department chair. If necessary, the committee may call an additional meeting with the student to discuss their progress towards their graduate degree.

### **6. Seminar Program**

#### **A. Seminar Introduction**

All full and part-time graduate students will enroll each semester in CHEM 690, Research Seminar in Chemistry, except during the semester that the student is presenting their literature seminar or thesis/dissertation seminar, when they should register for CHEM 692, Chemistry Seminar Presentation.

Each degree-seeking student will be required to present a minimum of two seminars. The first will be a literature seminar, presented no later than the end of the fourth semester of residence. The second seminar will be a research seminar presented prior to the student's thesis/dissertation defense. Students in the chemical physics program will present one seminar in each department with the final seminar being presented in the department of the dissertation research project. The assignment of a literature seminar topic, the format of the abstract and a grade will be determined according to the rules of the seminar committee. A student whose presentation is unsatisfactory (a



grade of "C" or less) will be required to give an additional seminar. Questions concerning material presented in seminars may appear on appropriate examinations. All full-time graduate students are required to attend departmental seminars.

In addition, each student is encouraged to attend appropriate seminars which are given in other departments on campus. The student is strongly urged to attend American Chemical Society, Sigma Xi and other professional meetings, and to travel to other institutions to hear outstanding speakers in scientific fields whenever the opportunity is presented.

## **B. Seminar Presentation Guidelines**

All graduate students must present two acceptable seminars. The first seminar will describe a topic from the literature unrelated to the student's research project and the second seminar will describe the student's thesis or dissertation research. Procedures for satisfying each of these requirements, suggestions for how to prepare for these seminars and the specific description regarding seminars from the Graduate Rules follow.

### **1. Literature Seminar**

- A.** This seminar will be presented before the end of the student's fourth semester of residency. The student may choose when to present this seminar before the start of the third semester of residency. If this is not done the student will then be assigned a date for this seminar to be presented during the fourth semester of residency.
- B.** The student must submit a topic for approval to the seminar chair. A form for topic approval is attached. Topic selection must occur at least one month prior to the start of the semester when this seminar is scheduled. The topic must not be related to the student's current or past research (e.g., B.S. research, M.S. research, or job related research) or other research being conducted by the student's research advisor.
- C.** A minimum of one of the journal articles used as one of the focal points for the literature seminar must be from one of the journals on the following list. The article must be a full journal article, not a letter, note, or review. The article must have been published within the last three years.

Journal of Chemical Society (Royal Chemistry Society Journals, Dalton, Perkin)	
Proceedings of the National Academy of Sciences	Langmuir
Journal of Physical Chemistry	Angewandte Chemie
Journal of Chemical Physics	Biophysical Journal
Inorganic Chemistry	Chemical Physics
Polyhedron	Physical Chemistry Chemical Physics
Analytical Chemistry	Journal of Molecular Biology
Journal of Polymer Science	Journal of Biological Chemistry
Polymer Chemistry	Journal of Biological Inorganic Chemistry
Polymer Physics	Journal of Natural Products
Journal of American Chemical Society	Nano Letters
Journal of Organic Chemistry	Science
Tetrahedron	Nature
Macromolecules	Physical Reviews
Biochemistry	Accounts of Chemical Research

- D. An abstract of the seminar must be prepared by the student and approved by the seminar committee Chair two weeks prior to the seminar. If this deadline is not met, the grade on this seminar will be lowered by one letter grade. The abstract should be 500 words maximum and contain references cited using the American Chemical Society format. It should provide a succinct summary of what material will be presented in the seminar.
- E. The literature seminar requirement will be met by earning a grade of “B” or better. A grade below “B” will require the presentation of a seminar on a new topic during the following semester.

## 2. Thesis or Dissertation Seminar

- A. This seminar will describe the thesis or dissertation research of the student and be presented prior to the student’s thesis/dissertation defense. This seminar should be scheduled at least one month prior to the start of the semester of its presentation.
- B. The preparation and approval of an abstract will follow the description given earlier for literature seminars (2A.4.)

## C. Seminar Preparation Suggestions

1. Always consult your research advisor regarding the selection of a topic for the literature seminar and the scheduling of the thesis/dissertation seminar.
2. The abstract should be 3 to 4 pages in length, typed double-spaced. References to the appropriate literature must follow the format given by the American Chemical Society. The abstract should provide a concise introduction to the dissertation/thesis subject and a description of the chapters in the dissertation/thesis. After approval of the abstract by the seminar committee two weeks prior to the dissertation/thesis seminar, reproduction and distribution will be handled by the Administrative Assistant for Graduate Affairs.
3. Use the helpful publication [‘How to Present a Paper or Poster’](#) for guidance in preparing your seminar. The seminar slides should be simple, uncluttered and legible. All slides should be viewed by the speaker from the back of the seminar room to confirm that they are legible.
4. Suggestions on how to organize your seminar.
  - A. Why was the project undertaken? This should be an introduction to the audience explaining why they should be interested in the topic to be discussed (1-3 minutes).
  - B. What was done? This should be a historical development of the topic (5-15 minutes).
  - C. What was learned? What concepts or theories have evolved and give an explanation of them (10-18 minutes).
  - D. What does it mean? Discussion of the state of the art today, how it can be used, what could or should be done to expand or to elucidate current data (10-20 minutes).

E. Summation. A brief overview of the facts presented in your talk (3-5 minutes). The total time should be 45 min, within a few minutes, to allow for 5-10 minutes for questions.

#### D. Seminar Grading

All full and part-time graduate students will enroll each semester in CHEM 690, Research Seminar in Chemistry, except during the semester that the student is presenting their literature seminar or thesis/dissertation seminar. A grade of "S" (satisfactory) or "U" (unsatisfactory) will be assigned based on seminar attendance and constructive participation in the asking of questions. During the semester that the student is presenting their literature seminar or thesis/dissertation seminar, they should register for CHEM 692, Chemistry Seminar Presentation, and a grade of "A", "B", "C", "D", or "F" will be assigned based on the evaluation of the seminar by the faculty. The seminar evaluation forms (a copy is attached) that are filled out by members of the audience will be used in an advisory capacity by the faculty.

### 7. Academic Performance

Acceptable grades in graduate courses are "A" or "B". Grades below "B" will cause a review of progress by the GEAC and/or Graduate Director and a letter of warning from the Graduate Director. Multiple grades below "B" may result in dismissal from the program in accordance with the Graduate Rules. Graduate students may not withdraw from a course without the permission of the GEAC. Graduate students who are having problems should talk with the Graduate Director or the Chair, and may petition the GEAC for permission to withdraw from a particular course. However, this permission will not automatically be granted.

### 8. Health Insurance

All graduate students are required to have health insurance coverage. A health service fee is assessed every student. Students may also purchase an additional health insurance policy at registration.

### 9. Graduate Student Travel Program

A program to assist graduate students in attending a scientific meeting (or meetings) during their career in the Department of Chemistry was initiated during the 1985-86 academic year.

In order to qualify for support, the following criteria must be met:

1. The student should be a full-time registered graduate student in either the M.S. or Ph.D. program. (Part-time graduate students may also be considered if travel support is not available from an employer.)
2. A maximum of \$400 will be available to a student during his/her entire graduate career. If a student completes an M.S. degree and then proceeds to a Ph.D. degree, he/she will not receive an additional \$400.
3. The student should be an author and the presenter of a paper (or poster) at the meeting (or meetings). The work to be presented must be related to the student's M.S. or Ph.D. research.
4. Approval for support must be obtained by completing the attached form prior to the submission of Travel Authorization forms.

Funds for support of this program will be available from the Kapp Estate bequest.

## **10. Graduate Student Academic Appeal Procedure**

Graduate students in the College of Humanities and Sciences at Virginia Commonwealth University have a right to appeal actions of an academic nature. If such action involves a course grade, the Grade Review Procedures should be followed. If such action involves computing, the Computer Ethics Policy should be followed. If such action involves dishonesty, the VCU Honor Code should be followed. For actions not governed by these policies, the following procedures apply.

### **A. The Appeal Procedure**

Graduate programs in the College of Humanities and Sciences are responsible for notifying students, in writing, of any academic actions taken that involve an individual student and of the student's right of appeal as defined in this document.

If a student thinks that an academic action is the result of a breach of due process, the student should first discuss the matter with the individual(s) involved. The faculty member or other relevant University staff member will explain the basis of the academic action that has affected the student.

If the student seeks further explanation, he/she must submit a written appeal based on issues of due process to the chair of the department in which the student is enrolled within fifteen (15) academic working days of the notification of the academic action. This appeal must state the action being appealed and the reason for the appeal. Appeals submitted after this deadline will be reviewed only in exceptional cases as determined by the chair of the department. Within fifteen (15) academic working days of receipt of the student's written appeal, the chair of the department will conduct an investigation and will notify the student in writing of the decision. This document will describe the chair's investigation, adjudicate the dispute and notify the student of his/her right to appeal further.

If the student seeks still further (and final) inquiry, he/she must submit a request for final inquiry in writing to the chair of the department within five (5) academic working days of the receipt of the chair's decision. Upon receipt of this request, the chair is bound to forward to the Dean of the College three (3) documents within five (5) academic working days: the student's request for final inquiry, the Chair's decision-document and the student's appeal. The Dean and/or the Associate Dean for Graduate Studies will review the case to insure that the student's right of due process, both in the original dispute and in this appeal process, has been observed. A decision, which will be final and binding to all parties, will be provided in writing by the Dean or Associate Dean within fifteen (15) academic working days of receipt of the three documents.

### **B. Special Provisions**

If the action being appealed directly involves the chair of the department, the initial appeal by the student shall be made to the Dean of the College. In such a case, by request for final inquiry shall be made to the Vice President for Academic Affairs.

If the Dean or Associate Dean is directly involved, they will be considered as regular faculty members within their academic departments. If the Associate Dean is directly involved, the student's right of final inquiry will be to the Dean; if the Dean is directly

involved, the student's right of final inquiry will be to the Vice President for Academic Affairs.

When unusual circumstances warrant, the Dean or Associate Dean shall have the authority to modify the time limits stipulated above.

Approved by the Graduate Academic  
Committee, College of Humanities and  
Sciences, to supersede earlier documents  
6 April 1990

## **11. Graduate Teaching Assistant Guidelines**

### **A. Duties of Teaching Assistants**

The primary duties of the teaching assistants are to further the student's comprehension of chemistry, to help the student develop proper laboratory techniques, and to develop the assistant's teaching effectiveness. Therefore, it is the assistant's responsibility to have a thorough knowledge of the material to be presented and to be prepared for the laboratory or recitation section. Each graduate student will be required to be a teaching assistant for at least one semester.

The presentation and organization of the subject material will be in accordance with the directives of the faculty member teaching the course. When the course is taught by more than one faculty member, one of them will act as Director. It is the teaching assistant's responsibility to know and follow the policies of the faculty member teaching the course concerning exams and grading, make-up laboratories, make-up laboratory assignments, make-up exams, safety and any special rules pertaining to a particular course. The TA may also be required to assist in the grading of examinations for the course.

To ensure that the teaching assistant has a thorough knowledge of the material presented, inexperienced teaching assistants (i.e., those who have not taught the course at VCU before) will be required to attend all lectures for the course in which they are TA's. Students teaching the recitation section for freshman chemistry should attend each of the chemistry lectures, and students teaching the laboratory sections for freshman or organic chemistry should attend the appropriate laboratory lecture. Experienced teaching assistants (i.e., those who have taught the specific course before) or those TA's for upper level courses are encouraged to attend the lectures, but are not required.

### **B. Stipend Payments**

GTAs and Doctoral Assistants (DAs) are paid on the 1st and 16th of each month. If these paydays fall on a weekend or holiday, payday is the last working day prior to the scheduled payday. Payment is distributed by direct deposit to the student's bank account. Tuition payments for GTAs and DAs are made directly to the University by the Graduate School or Department, as appropriate. Students should plan to pay required fees at the time of registration.

### **C. Teaching Performance and Responsibilities**

GTAs teach courses under the direction of a faculty member. They are expected to follow the instructions of that faculty member in regard to conducting course sessions and

grading. Students who are assigned to a recitation section and students who are assigned to upper level courses with reduced contact loads are expected to help the faculty member with the grading for the lecture portion of the course as part of their duties.

Graduate students in the Department of Chemistry are considered to be "junior faculty" and are expected to represent the Department in a professional manner. Since most graduate students have not been exposed to many of the situations and problems encountered in graduate school, particularly in teaching, some guidelines are given below.

- Meet all classes on time. If you are ill, it is your responsibility to find a qualified replacement for your teaching assignment (another graduate student in the program) and notify the professor in charge of the course of the situation. Never cancel a class without the permission of the professor in charge.
- Be prepared to answer questions and effectively present the class material assigned by the professor for whom you are teaching.
- If you are teaching a laboratory section, check the lab beforehand to ensure that all the needed chemicals and equipment are at hand. Make sure that the lab is clean, chemicals are put away and wastes are disposed of properly. Enforce all departmental safety rules, and obey them yourself.
- Grade and return all work promptly. Know and enforce the VCU Honor Code. Suspected cheating cases should be discussed immediately with the professor in charge of the course.
- Do not discuss students' grades with other students in the class or other graduate students. A student is entitled to privacy regarding their performance in a course. Do not post grades by name or full Social Security number. Do not return graded papers/quizzes/exams/lab reports by hanging them in an envelope on the door or wall.
- Do not discuss your opinion of a course, test or examination, laboratory, book, or professor with students. For example, the slightest hint that a test or examination was too long causes many more problems for the GTA than for the student.
- Demonstrate respect for your students as you would wish them to respect you. Never tell a student that they asked a dumb question or that if they were smart they would see the answer. Never get into an argument with or raise your voice to a student. If you have a problem with a student, discuss the problem with the professor in charge of the course. If you feel you see a problem such as lack of respect with another GTA or professor, discuss it with the Chair or the Graduate Director. Do not discuss such problems with people outside of the Department.
- Do not become personally involved with students in your classes. At this point in your career, you cannot be a "buddy" to the students. If you find yourself in a situation, in which you cannot impartially teach and grade a student, notify the Graduate Director immediately. Either your assignment will be changed or the student will be moved to another section.

Teaching performance is evaluated by the faculty member in charge of the course at the end of each semester. These evaluations are communicated to the Graduate Director, Research Advisor and student.

## 12. Procedures for Graduation

A student may receive their degree (graduate) in August, December or May. The official commencement ceremony is held twice each year, in May and December. The dates for these ceremonies are listed in the annual graduate bulletin. Each semester a date is posted for submission of a graduation application. For example to graduate in May, a student must submit their graduation application to their advisor in January. The student initiates the graduation checkout process online via E-services. Students must be enrolled for a minimum of 1 credit at the time of application/reapplication for graduation. See the following website for more details:

<http://www.graduate.vcu.edu/student/graduation.html>

The [Application to Graduate](#) can be found online. The student should complete the application, much of which is self-explanatory, and present it to their advisor for signature and submission to the Graduate Director. A few hints for completion of the application are given below.

List every course individually including research courses (CHEM 697) starting with the required lecture courses. Do not list CHEM 697 inclusively. Instead, list each entry on the transcript with the number of credits, grade and semester. Obviously, additional space will be required. Use a separate sheet of paper and note that Part I is continued on the separate sheet, but list the total credits on the original application.

To calculate your GPA, use only those credits for lecture courses. Do not include credits for research and seminar. Under VCU grade points, list the total grade points for your lecture courses (for each course, multiply the number of course credits times the quality points for the grade (A = 4, B = 3, C = 2)). Divide this number by the total lecture course credits and put this number in the space for GPA. Put an asterisk (\*) next to each of these numbers and add a statement below this section which reads "\*Does not include credits for research and seminar." Under the credits column, however, list all credits. The total credits required are, for an M.S., 27 (15 didactic course + 12 research) plus 1 credit of seminar for each semester of residence, and for a Ph.D., 48 (18 didactic course + 30 research) plus 1 credit of seminar for each semester of residence.

Approval Sheet (Part II of Graduation application) Section B, Preliminary review and approval must be signed by the advisor, graduate director and the Dean of the College of Humanities and Sciences and submitted to the graduation office by the required date (listed on the university calendar) each semester. You will receive a copy of this form with the three required signatures – keep this form because you will need to complete either section B or C at the end of the semester. If all requirements have been met, then Section C must be signed by the advisor, graduate director and the Dean of the College of Humanities and Sciences. If the requirements have not been met by the end of the semester in which graduation application was submitted, then Section D must be completed, and submitted to the graduation office. Candidates who do not graduate at the end of the semester for which they have applied must reregister and reapply. The E-services checkout procedure will not allow you to proceed with reapplying for a graduation application unless Section D is completed. It is your responsibility to get all signatures and submit this form to the graduation office.

A date for the defense of the thesis or dissertation should be selected as early as possible and submitted to the Graduate Director. The last date for the defense of theses and dissertations for each semester is published in the annual graduate bulletin. The final copy of the thesis or dissertation must be uploaded to the [electronic thesis and dissertation website](http://www.graduate.vcu.edu/community/thesis.html) and the final approval form must be submitted to the Dean's office with all signatures by this date. If these deadlines are not met, the graduation date will be postponed to the following semester. The rules regarding preparation of theses and dissertations are given at the following website:

<http://www.graduate.vcu.edu/community/thesis.html>.

An Electronic Thesis/Dissertation (ETD) will be prepared by the Administrative Assistant for Graduate Affairs will fill out this form prior to your final defense. This form is signed by your committee when you successfully defend your thesis or dissertation, but make sure to check off the appropriate Approval number check box and choose your thesis/dissertation release option and your signature. Note that you are required to write a justification for a delayed release, and that a 10 year release is generally not approved.

Approved by Faculty, 8/31/84

Revised: 10/7/86, 3/30/90, 6/94, 8/96, 7/99, 5/01, 1/07, 3/08, 3/09, 3/13, 3/14



# Laboratory Supplies, Safety, and Security

## 1. Laboratory Supplies and Repairs

### A. Chemistry Department Stockroom (Oliver Hall 3054)

The chemicals for the freshman and organic laboratories are prepared by stockroom employees and placed in the teaching labs. If you run short of material or need something not supplied, you should come to the stockroom for those items yourself; do not send a student. However, you should not leave the lab while it is in session. Therefore you must check beforehand to ensure that you have sufficient chemicals and equipment to carry out the assigned experiments. If there are consistent problems, notify the Stockroom Manager.

### B. Maintenance – Physical Plant

If you see a problem with the physical plant, report it immediately. If it is during the day, report the problem to the stockroom. If it is at night or on the weekends, call the emergency repair number or campus security. The most obvious problem is water running out under a lab door. Do not just walk away from such problems.

**For Emergency Repairs Dial: 828-9444**

## 2. Waste Disposal Procedures

### A. Introduction

Virginia Commonwealth University, under the direction of the Office of Environmental Health and Safety (OEHS), has an established program to meet the University's and Hospital's chemical waste management needs. All work that uses chemicals eventually produces chemical wastes. Those generating this waste have moral and legal obligations to see that the waste is handled and disposed of in ways that minimize both short-term and long-term harm to health and the environment.

In the Department of Chemistry, all waste generated by the research labs must be picked up by staff from OEHS. The bottles must be labeled with the required waste label. As chemicals are added to the waste bottle, the chemical should be listed on the label. Within 3 days of the bottle being filled, the bottle must be picked up by OEHS. Therefore, arrangements for pickup should be initiated as soon as the bottle is filled. Waste from teaching labs is removed by the stockroom staff. If you have any questions, please contact the stockroom manager or stockroom assistant.

The OEHS staff is responsible for all waste disposals through outside contractors. They can also answer any questions about disposal procedures. They may be reached at **828-1392**.

[www.vcu.edu/oehs/chemical/chemwastemanagement.pdf](http://www.vcu.edu/oehs/chemical/chemwastemanagement.pdf)

### B. Waste Collection and Disposal Procedures

The procedures for disposal are simple, but if they are not followed, the cost of waste disposal will increase significantly. The funds for waste disposal come principally from

overhead monies. Therefore, the more money that must be spent on waste disposal means less money available for graduate student support and return to the departments.

In the Department of Chemistry, the Stockroom Manager is the contact person for waste disposal and the stockroom is used as the collection point before being transported to another area. Several times each year a waste disposal company is contracted to pack and pick up all the waste containers. Any mistakes we make in labeling waste could result in a substantial increase of costs to VCU. Therefore, please follow the simple guidelines below.

1. Dispose of all broken or disposable glass in puncture proof containers. These boxes should be sealed, labeled "broken glass" and placed in the dumpster. Housekeeping will not pick up broken glass. If housekeeping staff injure themselves on broken glass, the liability could come back to the Department.
2. Syringe needles need to be disposed of in sharps/biohazard containers. VCU has a policy that NO needles may be recapped.
3. Biohazard waste is disposed in red bags with the Office of Environmental Health and Safety (828-7283).
4. All chemical waste must be placed in secure, properly labeled containers. Waste materials will only be accepted in properly sealed, disposable bottles or containers. Containers sealed with Parafilm, tape, etc..., will not be accepted. Waste containers will not be returned. Bottles and labels are available in the stockroom.

Each container of waste must be labeled with the following information:

- a. Contents (completely written out; no abbreviations).
- b. Percentage of contents, if possible.
- c. Name of investigator and telephone number.
- d. Date

OEHS (828-1392) should be called for waste removal. Do not mix solid and liquid waste together. Try to separate flammable from non-flammable waste and chlorinated hydrocarbons from everything else.

5. GTA's in teaching labs are responsible for the students obeying the waste disposal rules. In particular, do not mix waste bottles from different labs.
6. All research labs should have chemical inventories and a chemical hygiene plan. You should be familiar with the location and content of these documents. Further information about lab safety can be found on the Office of Environmental Health and Safety (OEHS) website and on the OEHS Chemical and Biological Safety Section (CBSS) website.

Material Safety Data Sheets (MSDS) can be obtained on-line at

<http://www.sigmaldrich.com/safety-center.html>

### C. Chemical Spill Emergency Response

Report any spills of hazardous chemicals immediately by calling:

**RADIATION/CHEMICAL EMERGENCY LINE at 828-9834**

Properly trained and protected personnel will come to evaluate and clean-up the spill.  
**Never call housekeeping to handle situations that they are not properly trained to handle.**

### 3. Security

#### A. Building Security

Building security is the responsibility of all building occupants. If you see a lab door open with no one present, close it. If you see people wandering around who obviously are not students or employees, do not be afraid to call the Campus Police. Keep doors locked and do not leave valuables unattended. The outer building doors are locked during non-operational university hours (typically after 10:30pm and during weekends). After hours building access (using your VCU ID) is required to enter during these times. To obtain after hour building access, please take your VCU ID to the Chemistry Office receptionist desk.

<b>Emergency Numbers:</b>	<b>Campus Police</b>	<b>8-1234</b>	<b>Security Escort</b>	<b>8-9255</b>
	<b>Fire</b>	<b>8-1234</b>	<b>Chemical Spills</b>	<b>8-9834</b>

# University and Departmental Operations

## 1. Department Operations

### A. Location

The Department of Chemistry occupies space in both Oliver Hall and Temple Building. The addresses are as follows:

Oliver Hall-Physical Science Wing  
1001 West Main Street  
Box 842006  
Richmond, VA 23284-2006

T. Edward Temple Building  
901 West Main Street  
Richmond, VA 23284-2006

The Chemistry Departmental Office is located in Room 3041, Oliver Hall.

### B. Phone Number

The Departmental telephone Number is (804) 828-1298. From a University telephone, you may dial 8-1298.

### C. Fax

The departmental FAX machine is located in the main office, Oliver Hall Room 3041. The FAX number is 804-828-8599. It is to be used for departmental business only. If you need to send a fax long distance, be sure to obtain your research advisor's long distance access code before using the fax; long distance codes are private and the Chemistry office **DOES NOT** have this information to provide to you. Instructions are provided for your convenience, in OLVPH 3041, above the fax machine.

### D. Keys

Keys for individual use can be obtained from Rhea Miller in the Chemistry Office (Oliver Hall 3041). Permission for electronic lock access **MUST** be granted by the lab/office owner in person or in writing/email. All key/electronic lock requests require a **Key Request-ID Activation Form**; the authorizing faculty/staff member **MUST** sign this form to grant key/lock access. **All key/electronic lock access requests will require at least 24 hours notification to process.** All keys **MUST BE RETURNED** to Rhea upon termination from the department. A fee will be accrued for all lost or unreturned keys.

### E. Mail

Each graduate student is assigned a mailbox in the department mailroom, Oliver 3053. Mail will be placed in this box on a daily basis. In addition, important memos, and notices will be placed in this box. Students in the Chemical Physics program generally do not have mailboxes in the Chemistry Department, if you would like to request a mailbox, please notify Rhea Miller. Also, part-time student mailboxes are typically located above the full-time graduate student mailboxes. **Please note that graduate students are responsible for checking both this mailbox and their official VCU e-mail on a regular basis.**

## 2. University Operations

### A. Library

There are two libraries, the Cabell Library on the Monroe Park Campus and the Tompkins-McCaw Library on the Medical Campus. The Cabell Library will have much of the chemical literature and books that students will need. The student ID card is second floor of Cabell Library.

### B. Shuttle Bus System

The VCU Campus Connector provides complimentary transportation service between the Monroe Park Campus and the VCU Medical Center. Service is provided for students, faculty and staff with a valid VCU Card. The first trips begin at Cabell Library and at Sanger Hall. VCU Campus Connector runs: Monday – Friday, 6:30 a.m. – 8:00 p.m. approximate 10-minute time intervals. Monday – Friday, 8:00 p.m. – 2:00 a.m. approximate 15-minute time intervals. Saturdays and Sundays, 10:00 a.m. until 9:00 p.m. approximate 15-minute time intervals. University observed holidays and breaks may conform to a different schedule. Please call the parking office (828-8726) or visit <http://www.parking.vcu.edu/vcupark/transportation.htm> for changes.

### C. Phone Numbers of Interest (All are Area Code 804)

Office of Records and Registration.....	828-1349
The Graduate School.....	828-6916
Office of International Admissions.....	828-6016
International Student and Scholar Services.....	828-0808
College of Humanities and Sciences.....	828-1674
James Branch Cabell Library.....	828-1110
Tompkins-McCaw Library.....	828-0636
Student Health Services.....	828-8828
Humanities & Sciences- Technology Services.....	828-6180
Parking and Transportation.....	828-8726



# VCU

**VIRGINIA COMMONWEALTH UNIVERSITY**

## **Make it real.**

Important Forms and Guidelines

## RESEARCH ADVISOR SELECTION FORM

If you did not attend the annual poster session presentations please have 75 % of the faculty and your proposed advisor sign this sheet and return it to the Graduate Director by December 15 (students commencing studies in the fall semester) or April 15 (students commencing studies in the spring semester).

Dr. Julio C. Alvarez	Date	Dr. Indika U. Arachchige	Date
----------------------	------	--------------------------	------

Dr. Everett E. Carpenter	Date	Dr. Maryanne M. Collinson	Date
--------------------------	------	---------------------------	------

Dr. Thomas A. Cropp	Date	Dr. Hani M. El-Kaderi	Date
---------------------	------	-----------------------	------

Dr. M. Samy El-Shall	Date	Dr. Nicholas P. Farrell	Date
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Dr. Scott Gronert	Date	Dr. Matthew C.T. Hartman	Date
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Dr. Sally Hunnicutt	Date	Dr. Heather Lucas	Date
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Dr. Alenka Luzar	Date	Dr. Suzanne M. Ruder	Date
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Dr. Sarah Rutan	Date	Dr. Vladimir A. Sidorov	Date
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Dr. James Turner	Date		
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_____ attended annual poster session	_____
Student Name (print)	Signature of Graduate Director

Research advisor choice:

Dr. _____	_____
	Research Advisor's Signature

\_\_\_\_\_  
**Student's Signature**

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Dr. \_\_\_\_\_ is approved as the research advisor of \_\_\_\_\_.  
(Student Name- Please Print Legibly)

_____	_____
Signature of Graduate Director or Chair	Date

## CHEMICAL PHYSICS PROGRAM – SIGNATURES

The signatures below are required only if the student is in the Chemical Physics Program.

---

Dr. Alison A. Baski

---

Date

---

Dr. Massimo F. Bertino

---

Date

---

Dr. Marilyn F. Bishop

---

Date

---

Dr. Denis Demchenko

---

Date

---

Dr. Puru Jena

---

Date

---

Dr. Shiv Khanna

---

Date

---

Dr. Mikhail Reshchikov

---

Date

---

Dr. Dexian Ye

---

Date



MEMORANDUM

Date: \_\_\_\_\_

To: Seminar Chair

From: \_\_\_\_\_

**Subject: Literature Seminar Title and Date Request**

Once the seminar date has been assigned, the student may not cancel or delay the seminar without permission from the seminar committee. **Abstracts are due to the seminar Chair two weeks prior to the seminar date.**

**Proposed Title:**

(Attach short paragraph describing the scope of the topic, and pertinent references)

**Proposed Dates:** (consult with seminar chair or office staff first for available dates)

"This seminar topic is not related to my prior or current research or other research going on in my research group"

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Faculty Advisor's Signature

MEMORANDUM

Date: \_\_\_\_\_

To: Seminar Chair

From: \_\_\_\_\_

**Subject: Research Seminar Title and Date Request**

Once the seminar date has been assigned, the student may not cancel or delay the seminar without permission from the seminar committee. **Abstracts are due to the seminar Chair two weeks prior to the seminar date.**

**Proposed Title:**

**Proposed Dates:** (consult with seminar chair or office staff first for available dates)

Presenter: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Evaluate each item, circling the most appropriate term. Please provide comments where appropriate. Rankings are 1-5 with 1 being Poor and 5 being Excellent.

**(40%) Organization ( 1 / 2 / 3 / 4 / 5 )**

Well-prepared slides  
Clearly defined introduction  
Appropriate depth  
Strong conclusion  
Comments:

**(30%) Questions ( 1 / 2 / 3 / 4 / 5 )**

Management of Questions  
Perceived Competence  
Depth of Presentation  
Comments:

**(20%) Delivery ( 1 / 2 / 3 / 4 / 5 )**

Maintained Eye Contact  
Appearance  
Voice projection, rate, and clarity  
Comments:

**(10%) References ( 1 / 2 / 3 / 4 / 5 )**

Appropriateness of abstract  
Use of references  
Comments:

**REQUEST FOR TRAVEL FUNDS FROM  
GRADUATE STUDENT TRAVEL PROGRAM**

Name \_\_\_\_\_ Date \_\_\_\_\_

Meeting \_\_\_\_\_

Dates of Meeting \_\_\_\_\_

Location of Meeting \_\_\_\_\_

Title of Paper \_\_\_\_\_

\_\_\_\_\_

Authors \_\_\_\_\_

\_\_\_\_\_

Type of Presentation (oral, poster, etc.) \_\_\_\_\_

\_\_\_\_\_

Amount Requested (\$400 maximum during student's career) \_\_\_\_\_

**APPROVAL**

Research Advisor \_\_\_\_\_ Date \_\_\_\_\_

Signature

Graduate Director \_\_\_\_\_ Date \_\_\_\_\_

Signature

**\*This form must be submitted to the Graduate Director 4-6 weeks in advance of the meeting date**

# CHEMICAL WASTE DISPOSAL GUIDELINES

## POST IN LAB

1. Any unlabeled, unknown or improperly labeled waste picked up for disposal will result in disposal charges to that faculty member.
2. Beginning each semester, waste bottles should be labeled as described below for use for waste that semester.
3. Waste materials must be in properly sealed disposable bottles or containers with tops. Open containers or containers sealed with parafilm, tape, corks, etc. will not be accepted. Waste containers will not be returned.
4. LABELS: Each container of waste must be labeled with the following information:
  - (a) Contents (chemical names written out; no abbreviations or chemical structures)
  - (b) Approximate percentage of contents
  - (c) Name of faculty member / phone number
  - (d) Date

Labels are available in the stockroom (3054)

5. Direct any questions concerning the above information to Meredith Moses at 828-7501 or email [lmoses@vcu.edu](mailto:lmoses@vcu.edu).