Virginia Commonwealth University
Department of Chemistry

VIRGINIA COMMONWEALTH UNIVERSITY

2018-2019
Graduate Studies Handbook

DEPARTMENT OF CHEMISTRY
PO BOX 842006
RICHMOND, VA 23284
PHONE: 804-828-1298
FAX: 804-828-8599

https://chemistry.vcu.edu/media/chemistry/docs/graduate-handbooks/Grad-Handbook-2018-2019.pdf

TABLE OF CONTENTS

Laboratory Supplies, Safety, and Security

University Operations

Important Forms and Guidelines

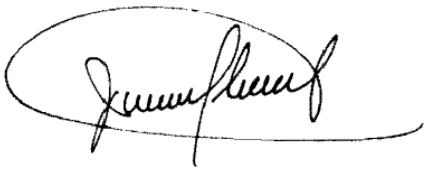
Dear Graduate Students:

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 rules and regulations for graduate education at the university (http://bulletin.vcu.edu/academic-regs/grad/). The handbook also contains information regarding the structure of the Chemistry Department, its personnel, and their job responsibilities.

I hope you find this information useful as you prepare to enter the program or while you are a student in the Department. If you have any questions, please feel free to contact me. Once again, welcome to the Department of Chemistry and VCU.

Sincerely yours,



Julio C. Alvarez
Graduate Director

Chemistry Directory

Name	*Phone*	*Office*	*Bldg*	*Email*
FACULTY (PRINCIPAL INVESTIGATORS)				
ALVAREZ, Julio	8-3521	4025	OLVPH	jcalvarez2@vcu.edu
ARACHCHIGE, Indika	8-6855	4024	OLVPH	iuarachchige@vcu.edu
BELECKI, Katherine	8-8302	2044	OLVPH	kbelecki@vcu.edu
BRATKO, Dusan	8-1865	4021	OLVPH	dbratko@vcu.edu
CARPENTER, Everett	8-7508	3309 C	TEMPL	ecarpenter2@vcu.edu
COLLINSON, Maryanne	8-7509	4429-0	TEMPL	mmcollinson@vcu.edu
CROPP, Ashton	8-3597	3047	OLVPH	tacropp@vcu.edu
DHAKAL, Soma	8-8422	4423-0	TEMPL	sndhakal@vcu.edu
EL-KADERI, Hani	8-7505	4019	OLVPH	helkaderi@vcu.edu
EL-SHALL, Samy	8-3518	4026	OLVPH	mselshal@vcu.edu
FARRELL, Nicholas	8-6320	4413-0	TEMPL	npfarrell@vcu.edu
HARTMAN, Matthew	8-7513 628-4095	3048	OLVPH MCV	mchartman@vcu.edu Massey Cancer Center
HUNNICUTT, Sally	7-0531	3035	OLVPH	sshunnic@vcu.edu
KELLY, Christopher	4022A	8-1080	OLVPH	cbkelly@vcu.edu
LUCAS, Heather	8-7512	4022	OLVPH	hrlucas@vcu.edu
LUZAR, Alenka	8-3367	3304-C	TEMPL	aluzar@vcu.edu
RUDER, Suzanne	8-7519	4023	OLVPH	sruder@vcu.edu
SIDOROV, Vladimir	8-7507	4023-A	OLVPH	vasidorov@vcu.edu
SIEBER, Joshua	8-1669	3037	OLVPH	jdsieber@vcu.edu
TIBBETTS, Katharine	8-7515	4020	OLVPH	kmtibbetts@vcu.edu
UNDERGRADUATE INSTRUCTION FACULTY				
BAKER, Jon	8-2276	2063	OLVPH	jcbaker@vcu.edu
CHANG, Linda	8-0915	2070	OLVPH	ldchang@vcu.edu
GILES, Robert	8-6174	2072	OLVPH	rlgiles@vcu.edu
HARRIS, Amanda	8-1626	2048	OLVPH	harrisal@vcu.edu
HUNNICUTT, Mike	8-6839	2045	OLVPH	mhunnicutt@vcu.edu
JENSON, David	8-8754	2047	OLVPH	dljenson@vcu.edu
MALWATHUMULLAGE, Kuda	7-4576	2046	OLVPH	ckudamalwathu@vcu.edu
MINASKANIAN, Gevork	7-0713	2061	OLVPH	gminaska@vcu.edu
MOUSSA, Sherif	8-9857	2049	OLVPH	smoussa@vcu.edu
ROESSER, James	8-3520	2064	OLVPH	jroesser@vcu.edu
SMITH, Mychal	8-8667	2074	OLVPH	mdsmith@vcu.edu
TOPICH, Ruth	7-1724	2066	OLVPH	rmtopich@vcu.edu
ZILINSKAS, Egidijus	7-0667	2060	OLVPH	ezilinskas@vcu.edu

PROGRAM/LAB COORDINATORS AND FACILITY DIRECTORS				
CRAWLEY, Charlene Coordinator for Interdisciplinary Science and Emerging Scholars	8-4262	3036	OLVPH	cdcrawle@vcu.edu
FRANKLIN, Constance Organic Lab Coordinator		2071	OLVPH	franklinc@vcu.edu
NELSON, Kristina Director Mass Spectrometry Facility	7-9335	1077	OLVED	ktnelson@vcu.edu
POLO, Deborah Director of Student Learning Outcomes	8-0691	2065	OLVPH	dlpolo@vcu.edu
QU, Yun Director NMR Facility	8-1943	3307	TEMPL	yqu@vcu.edu
TOPICH, Joseph General Chem Lab Coordinator	8-4358	2067 3050	OLVPH (Lab)	jtopich@vcu.edu
TURNER, Joseph Director Instrumentation Facility	8-5377	4023-B	OLVPH	jturner9@vcu.edu
WALLER, LaChelle Director Undergraduate Advising	8-5946	2069	OLVPH	lmwaller@vcu.edu
STAFF				
ALLIN, Edith Fiscal Manager	8-0216	2054	OLVPH	emallin@vcu.edu
ARNOLD, John Building Manager	8-7602	3046	OLVPH	jjarnold@vcu.edu
BELL, Allison Personnel Administrator	8-1299	2059	OLVPH	arbell@vcu.edu
JONES, Tierrie Financial Coordinator	8-7514	2057	OLVPH	tdjones@vcu.edu
KNITTER, Kevin Mass Spectrometry Technician	8-7487	1076	OLVED	ksknitter@vcu.edu
MILLER, Rhea Graduate Administrative Assistant	7-0352	3039	OLVPH	rmiller3@vcu.edu
MORRIS, Michael (Stockroom)	8-7501	3054	OLVPH	mpmorris@vcu.edu
NESBY, Joia Administrative Assistant	8-6660	3041	OLVPH	nesbyjl@vcu.edu
SHELTON, Taresha Procurement Specialist	8-6893	2048	OLVPH	tshelton2@vcu.edu
WILLIAMS, Joann Grants Specialist	8-9613	2056	OLVPH	jpwilliams@vcu.edu
DEPARTMENTAL ADMINISTRATIVE OFFICES AND RESOURCES				
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
STOCKROOM	8-7501 (05)	3054	OLVPH	NONE
COMPUTER LAB	NO PHONE	3303	TEMPL	NONE
GSO (Grad Student Organization)	NO PHONE	3309 A&B	TEMPL	President: Eric Ginsburg ginsburge@vcu.edu
Humanities & Sciences Tech **(HASTECH)**	8-6180	Basem ent	701 W. Grace	hastech@vcu.edu
Media Support Services	8-1098		Cabell Library	NONE

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 the Graduate Director.

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

https://chemistry.vcu.edu/graduates/graduate-handbook/

Additional information concerning graduate study may be obtained from the Graduate Bulletin of Virginia Commonwealth University http://bulletin.vcu.edu/academic-regs/grad/. 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 (Ph.D.) and Master of Science (MS) degrees in chemistry. In cooperation with the Physics Department, VCU also offers a Ph.D. degree in chemical physics. The option of a part-time MS in chemistry is also available for special cases. Students interested in the MS degree are encouraged to contact potential research advisors and secure funding before enrolling in the program.

B. Financial Assistance

Students on the Ph.D. track are eligible for financial assistance from VCU through teaching or research assistantships (TA or RA), however funding from self or fellowships outside VCU is also acceptable. To qualify for financial support from VCU, students may not hold employment outside VCU and must maintain a graduate GPA $\geq$ 3.0 (B) as well as make timely progress towards their degree. (Graduate Bulletin http://bulletin.vcu.edu/academic-regs/grad/). Because the stipend for MS is lower than for Ph.D., students demoted to MS will see a reduction in pay after switching and will be funded only long enough to finish the degree (one semester maximum).

Students who are teaching assistants are required to teach in recitation and laboratory sections as assigned by the Associate Chair. These assignments are carried out under the supervision of faculty who are in charge of those courses.

Research assistants perform research for faculty members (principal investigators) who have financial support for their research from the University or from an outside agency.

The Department also offers a number of fellowships, which are awarded on a yearly basis and are listed in the departmental webpage along with the application requirements at: (https://chemistry.vcu.edu/undergraduates/departmental-scholarships/).

Financial aid is awarded on a 9-month basis, except for some first-year students who are given 12-month appointments. In any case, the start of assistantship contract (TA or RA) is August 10th. For special cases of students starting in Spring, a TA appointment begins on January 10th. The academic calendar at https://academiccalendars.vcu.edu/ lists the start and end of classes for each semester.

Summer support may be available through RA (from advisor's grant) or TA if teaching during any of the summer periods, which may entail a lower load as well as stipend than the regular semester. The rules for awarding financial support are as follows:

1. A student who enters the Ph.D. program with a bachelor's degree may anticipate support either TA or RA, for a maximum period of **FIVE CALENDAR YEARS**.
2. A student who enters the Ph.D. program with a master's degree may anticipate support either TA or RA, for a maximum period of **FOUR CALENDAR YEARS**.

2. Proficiency Examinations

Each student entering the graduate program in chemistry shall take proficiency examinations in the four areas of chemistry: analytical, inorganic, organic and physical chemistry. These are standardized undergraduate ACS exams offered during orientation week which starts on August or January 10th, and are graded with a score of 2, 1 or 0. The following table indicates the coursework required for a given score in each area.

Area	Score of 1	Score of 0
Analytical	3 credits of graduate analytical courses	CHEM 409
Inorganic	CHEM 620	CHEM 320
Organic	CHEM 504	CHEM 301 and/or 302
Physical	CHEM 510 and/or 511*	CHEM 510 or 511, 304*

*These courses will be recommended by GEAC depending on the student's performance on quantum mechanics, thermodynamics and kinetics.

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) is a source of advice and academic assessment for all graduate students. Based on the proficiency results, and in conjunction with every entering student, the committee helps delineating a course plan, which must be followed strictly to prevent an unsatisfactory "U" grade in Directed Research CHEM 697.

The rules regarding course performance are as follows:

1. For satisfactory standing and to qualify for TA or RA support, every student must have a graduate GPA ≥ 3.0 (B) as reported on the VCU-online tracker "Degree Works" on e-services.
2. A student whose graduate GPA falls below 3.0 (B) will receive a warning from the Graduate Director and will have one semester to recover (*i.e.* getting enough credits of A). If not, such student will lose the graduate assistantship (TA or RA) and will have to find alternate means of support to continue in the program. However, regardless of funding source, the Graduate School will not approve graduation (Ph.D. or MS) unless the graduate GPA is 3.0 (B) or above.
3. A student who earn a "U" grade (unsatisfactory) in research will receive a warning from the Graduate Director. However, a second "U" grade in research will cause loss of assistantship (TA or RA) and depending on the case, immediate dismissal from the program by GEAC.
4. Students who earn grades of "D" or "F" will be reviewed for immediate dismissal if recovery in one semester is not feasible.

B. Selection of a Research Advisor

Each faculty member will present his or her research interests to the entering graduate students at a session during the Fall orientation week. Students should then arrange individual sessions to discuss projects of interest with corresponding faculty members. 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.

Students should select a research advisor and return the advisor selection form signed by advisor and chair to the Administrative Graduate Assistant by December 1 when starting in Fall and May 1 when starting in Spring. When making the selection, students should also state their second and third choices, in case the first one is not available.

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. Thesis Committee Selection

For both the Ph.D. and M.S. seeking student, the research advisor in consultation with the student shall appoint a thesis committee that is composed of at least four members

including the research advisor. 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 Graduate Director will appoint a tenured faculty member other than the research advisor as Chair of the thesis or dissertation committee.

The names of the committee members must be submitted to the Graduate Director and the Administrative Graduate Assistant for approval, by February 1 when starting in Fall, and by September 1 when starting in the spring.

Students will meet with their committee as part of the oral candidacy examination (Ph.D.) and the final thesis defense (MS and Ph.D.).

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, as well as selecting student for the program; preparing recruiting posters and brochures; arranging for visits of potential graduate students.

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 Seminar (CHEM 690 or 692), Directed Research (CHEM 697) or Chemistry Perspectives and Ethics (CHEM 693). 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 corresponding sections in 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 (1.0 credit) once during the course of their graduate studies, preferably 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 on the second Saturday (9:00 am to 12:00 noon) of 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, 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 with the Graduate Administrative Assistant. 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.

A student who does not complete the exams in the six attempts, may request an extra chance by writing a letter to GEAC explaining the case and adding a supporting statement by advisor. However, in the event of not passing this requirement a student will be restricted to an MS degree.

3. Oral Candidacy Examination or Proposal Defense

Scheduling. After presenting the Literature Seminar and passing the Cumulative Exams, students must write an original manuscript describing their current research project

along with a section of proposed work. This Proposal manuscript must be sent to each member of the student's dissertation committee a week prior to the scheduled defense. The Oral Candidacy Examination or Proposal Defense should be scheduled no later than the end of the fifth semester of residency, which is the last day of Finals at the Monroe Park Campus as listed on the VCU calendar. Failure to meet this deadline will result in an unsatisfactory "U" grade in Directed Research (CHEM 697) for that semester and subsequent semesters that go by without defending the Proposal. Getting two "U" grades will lead to loss of assistantship (TA or RA) and automatic dismissal from the program.

Once a defense date is agreed upon with the committee, the student must communicate this information along with the Title of the Proposal to the Graduate Director and the Graduate Administrative Assistant. This will ensure that a Proposal Defense Package including student records and forms for Evaluation and Candidacy Application will be ready to be signed on the day of the defense. The student is also responsible for reserving the room of the defense and sending timely reminders to the committee. After completion of the defense and the processing of the Candidacy Application the student becomes a PhD Candidate.

Writing Format. The Proposal manuscript must include the following sections:

(1) A Background section describing the known facts on which the research being conducted by the student is based upon.
(2) A section devoted to Statement of the Problem, its significance and hypothetical solution including Specific Aims.
(3) A section of Preliminary Results describing the most relevant experimental outcomes obtained since starting the research and including Experimental Approach.
(4) A Proposed Work section outlining the steps to be carried out in the future, discussing feasibility, interpretation of data, relationship with original hypotheses/aims and experimental approach if different from Preliminary Results.
(5) A section of Bibliographic References in the style of *The Journal of The American Chemical Society* (JACS) and including article titles.

The manuscript must consist of 15 numbered pages in single space (or 30 pages double space) without counting the section for References. Font size must be 12 with page margins of 1 inch on all sides. The order of the sections is flexible as long as they appear explicitly in the text. The Proposed Work Section must be *at least* 20 % of the manuscript which is equivalent to 3 pages in single space (6 in double space). Figures must be numbered and embedded in the section of text where they are being described. A minimum of 25 references must be cited with no more than 30% citations from the student's research group. The writing style must be clear and simple, suited for a general readership in chemistry. Manuscripts that do not comply with these guidelines or are unintelligible will be returned by the committee, thus delaying the defense. **Students are encouraged to seek proofreading and writing support from the VCU Writing Center http://writing.vcu.edu/ or if needed, to take the course ENGR 570 "Effective Technical Writing" or GRAD 614 "Introduction to Grant Writing".**

Oral Defense Execution and Evaluation. On the day of the defense, the examination begins with the student giving a 20-minute presentation summarizing the major points of the manuscript followed by rounds of questions from the committee. The length of

questioning is at committee's discretion with questions related to the manuscript or the short presentation, and other points relevant to the project.

Once the question session is concluded, the student is asked out of the room while committee deliberation takes place. Shortly after, an assessment based on the evaluation form in page 46 of this Handbook is communicated to the student. The attributes evaluated are the ability to present and analyze scientific data, the ability to answer questions with appropriate depth and the ability to conduct and propose experiments independently. If a student performance does not meet expectations, the committee may request a second meeting to prompt improvements in specific areas. However in the event of not passing at the second attempt, the option of terminal MSc with thesis will be implemented.

4. Dissertation

The candidate must conduct an original investigation under the guidance 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/student/thesis.html

When the advisor and the candidate determine that sufficient research has been completed to prepare a dissertation, a defense date with the thesis committee must be scheduled. 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.

When the dissertation has been completed and the advisor considers it acceptable and all the Ph.D. degree requirements have been satisfied, the candidate must notify the Graduate Director and Graduate Administrative Assistant of the defense date. Copies of the dissertation in acceptable form and style are to be submitted to the dissertation committee one week prior to defense date.

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/student/thesis.html).

The doctoral dissertation must be sent to ProQuest (formerly UMI) for microfiliming 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

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 coursework 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.

B. Requirements – Master of Science Degree

The awarding of an MS degree depends upon the accomplishments of the student in research, coursework, and on the thesis. Requirements in detail are indicated below.

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 student's performance on quantum mechanics, thermodynamics and kinetics.

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.

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 MS 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 M.S. students are required to enroll in CHEM 698, Investigations in Current Chemistry Literature (1 credit) once during the course of their graduate studies, preferably 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 coursework (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

Guidelines for preparation of the thesis can be found on the Graduate School website:

http://www.graduate.vcu.edu/student/thesis.html

When the advisor and the student determine that sufficient research has been completed to prepare a thesis, a defense date may be scheduled with the thesis

committee. Student must notify the Graduate Administrative Assistant and Graduate Director so that the defense package can be prepared for the defense date. This date must be at least one month prior to the deadline for completion of all degree requirements.

Upon approval of the thesis by the advisor, the student submits copies as required to the thesis committee one week prior to the defense date. The final defense 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. 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

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. 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.

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. Posters must be no larger than the board size provided (3'x4').

B. Students are required to orally present background material and their results to committee members for discussion.

2. Graduate Committee Evaluations

A. The research progress of graduate students will be evaluated by their thesis committee members during the poster session. Students must e-mail the poster pdf file to their committee members and let them know of the time of presentation during the poster schedule.

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 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 stated in the syllabus for CHEM 690/692. A student whose presentation is unsatisfactory (a grade of "C" or less) will be required to give an additional seminar. All full-time graduate students are required to attend departmental seminars.

B. Seminar Presentation Guidelines

1. Literature Seminar

A. This seminar will be presented before the end of the student's fourth semester of residency. The student must select a date from the seminar schedule published on Blackboard by notifying the Graduate Administrative Assistant and the professor in charge of CHEM 690/692.

B. The student must submit a topic for approval to the CHEM 690/692 professor. A form for topic approval is attached. 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. An abstract of the seminar must be prepared by the student and submitted by the CHEM 690/692 professor two weeks prior to the seminar. 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.

D. 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.

B. The preparation and approval of an abstract will follow the description given earlier for literature seminars (1C)

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. 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 faculty members in the audience.

7. Academic Performance

Students whose graduate GPA fall below 3.0 (B) as displayed in the online VCU tracker "Degree Works", will have one semester to recover, or else assistantship (TA or RA) will be lost. In such a case, the only option for continuation in the program will be through self-support, however for graduation approval the graduate GPA must be 3.0 (B) or higher (Ph.D. or MS).

8. Health Insurance

All graduate students are required to have health insurance coverage. A health service fee is assessed to 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 is available.

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

1. The student should be a full-time registered graduate student.
2. A maximum of $400 will be available to a student during his/her entire graduate career. If a student completes an MS 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 research.
4. Approval for support must be obtained by completing the appropriate form prior to the submission of Travel Authorization forms.

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, 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

Graduate Teaching Assistants (TA) 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 GAs 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

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 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/student/thesis.html.

An Electronic Thesis/Dissertation (ETD) Approval Form will be prepared by the Administrative Assistant for Graduate Affairs 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 building, 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

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 of 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.sigmaaldrich.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 8:00pm 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.

Emergency Numbers:	Campus Police	8-1234	Security Escort	8-9255
	Fire	8-1234	Chemical Spills	8-9834

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 the Graduate Administrative Assistant 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 the Graduate Administrative Assistant. 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.

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 ID Card. The first trips begin at Cabell Library and at Sanger Hall. University observed holidays and breaks may conform to a different schedule. Please call the parking office (828-7275) or visit http://www.parking.vcu.edu/vcupark/RamRide.htm for schedules.

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..... 828-7275

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 Arachchige	_____ Date
_____ Dr. Katherine Belecki	_____ 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	_____ Dr. Scott Gronert	_____ Date
_____ Dr. Matthew C.T. Hartman	_____ Date	_____ Dr. Sally Hunnicutt	_____ Date
_____ Dr. Heather Lucas	_____ Date	_____ Dr. Alenka Luzar	_____ Date
_____ Dr. Suzanne M. Ruder	_____ Date	_____ Dr. Sarah Rutan	_____ Date
_____ Dr. Vladimir A. Sidorov	_____ Date	_____ Dr. James Terner	_____ Date
_____ Dr. Katharine M. Tibbetts	_____ Date		

_____ attended annual poster session _____
Student Name (print) Signature of Graduate Director

Research advisor choice:

Dr._____ _____
Research Advisor's Signature

_____
Student's Signature

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

Department of Chemistry
Virginia Commonwealth University

MEMORANDUM

Date: _____

To: Seminar Professor CHEM 690/692

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 CHEM 690/692 professor 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

Department of Chemistry
Virginia Commonwealth University

MEMORANDUM

Date: _____

To: Seminar Professor CHEM 690/692

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 CHEM 690/692 professor two weeks prior to the seminar date.**

Proposed Title:

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

Virginia Commonwealth University
Department of Chemistry

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

College of Humanities and Sciences
Department of Chemistry

Type of Examination ☐ Masters Committee Update ☐ PhD Committee Update
☐ Masters Thesis Defense ☐ PhD Oral Proposal Defense

We have examined _____

Please rate the student on each of the following learning outcomes (check appropriate box):

Learning Outcome	Exceeds	Meets	Does Not Meet
Develop effective oral and written communication skills	☐	☐	☐
Demonstrate expertise (breadth and depth) in chemistry	☐	☐	☐
Demonstrate appropriate ability to design and conduct experimental research	☐	☐	☐
Demonstrate ability to analyze data critically and to design experiments independently.	☐	☐	☐

The results of the examination were: Satisfactory ☐
Not Satisfactory ☐

Committee Chair:_____Department of _____
Advisor:_____Department of _____

Committee
Members: _____Department of _____

_____Department of _____

_____Department of _____

We dissent from the report:_____

_____

Recommended date for next meeting: _____Estimated graduation date: _____

Other Comments and Requirements: _____

_____

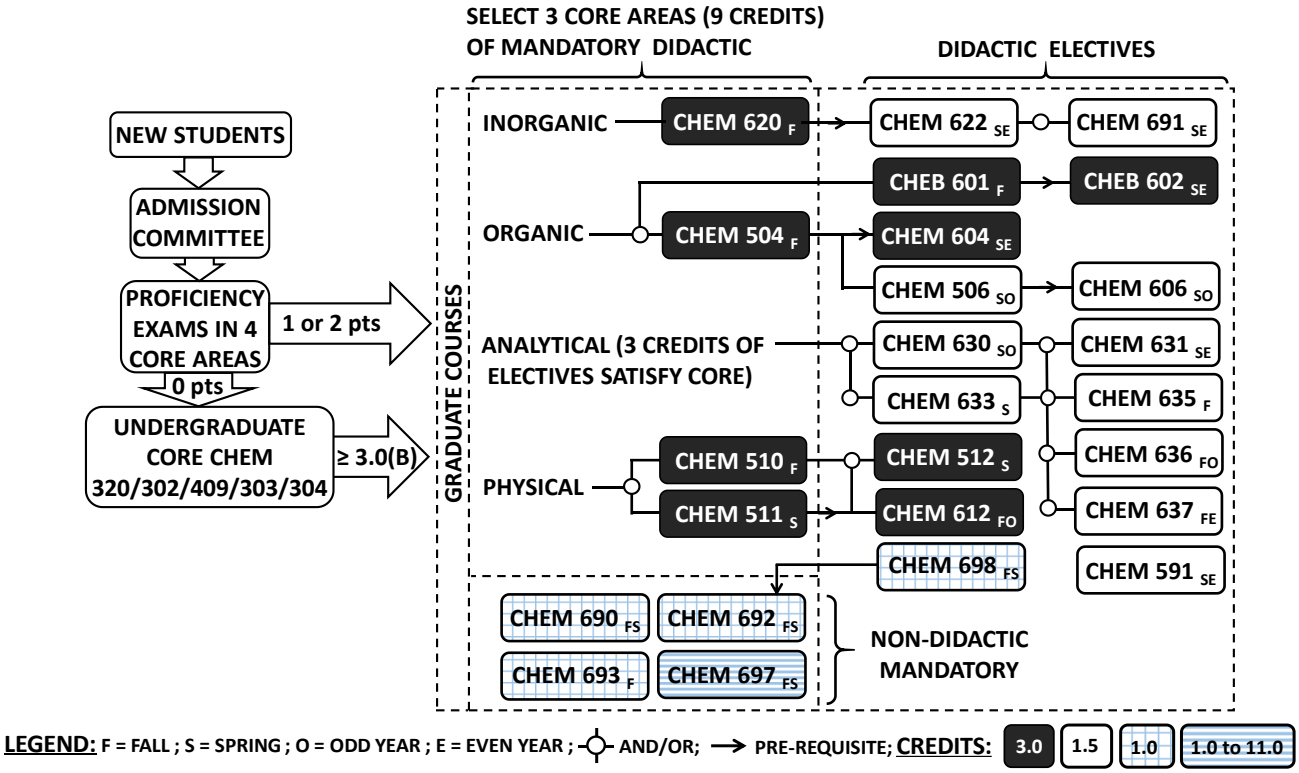
Date of Examination: _____

Signature of Advising Professor: _____

Signature of Program Director: _____

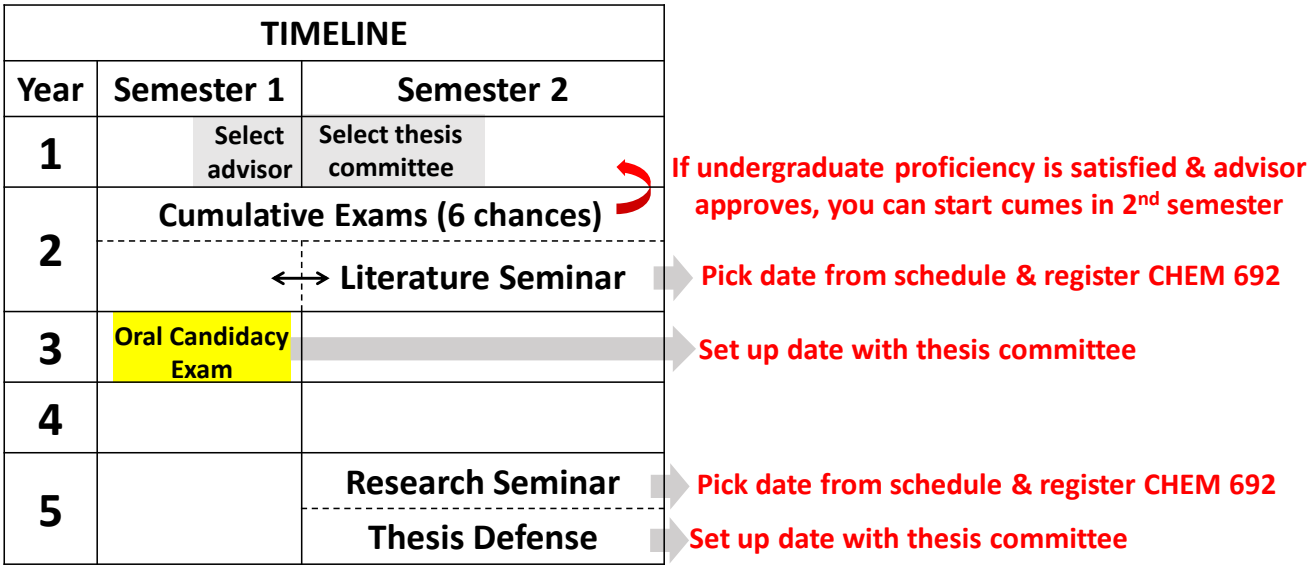
Signature of Dean: _____

CHEMISTRY GRADUATE PROGRAM FLOW CHART



You must complete a minimum of 18 didactic credits (60 total) for PhD, with at least 9 credits in 3 core areas (can leave out one area with a proficiency score of 2 but must include any area with a score of 1) while adding electives in an area of specialization and required non-didactic courses. To receive stipend, you must register a minimum of 9.0 graduate credits per semester and maintain a GPA ≥ 3.0. However, when still taking didactic courses **register 12 graduate credits in case of cancelations.** Every semester, add CHEM 697 credits as needed but do not go over 15 credits total per semester. If you were admitted on a 12-month appointment, register 3 credits of CHEM 697 in your first summer in the program, but abstain from doing that if admitted on a 9-month contract. When getting a proficiency score of 0, you must take an undergraduate core course (≤400), but a C in such a course would require to follow with a graduate core course (≥500) in that area. Enroll in CHEM 693 during the first year and in CHEM 698 before your first departmental seminar. Register CHEM 690 every semester, except the semester you present a departmental seminar when you must register CHEM 692 instead. Do not drop courses without advisor's and Graduate Director's consent. Keep track of your progress through Degree Works using your VCU ID in e-services.

AREA		COURSE	NAME	CREDITS	OFFERED
DIDACTIC	INORGANIC	CHEM 620	Advanced Inorganic	3.0	Fall
		CHEM 622	Solid State & Materials	1.5	Spring
		CHEM 691	Topics in Chemistry: Porous Materials	1.5	Spring
	ORGANIC	CHEM 504	Advanced Organic I	3.0	Fall
		CHEM 604	Advanced Organic II	3.0	Spring
		CHEM 506	Introduction to Spectroscopic Methods	1.5	Spring
		CHEM 606	Advanced Spectroscopic Methods	1.5	Spring
		CHEB 601	Chemical Biology I	3.0	Fall
		CHEB 602	Chemical Biology II	3.0	Spring
	ANALYTICAL	CHEM 630	Electroanalytical Chemistry	1.5	Spring
		CHEM 631	Separation Science	1.5	Spring
		CHEM 633	Mass Spectrometry	1.5	Spring
		CHEM 635	Spectrochemical Analysis	1.5	Fall
		CHEM 636	Biosensors	1.5	Fall
		CHEM 637	Electrochemistry Applications	1.5	Fall
	PHYSICAL	CHEM 510	Atomic and Molecular Structure	3.0	Fall
		CHEM 511	Chemical Thermodynamic and Kinetics	3.0	Spring
		CHEM 512	Applied Molecular Modeling	3.0	Spring
		CHEM 612	Modern Statistical Mechanics: Fundamentals & Applications	3.0	Fall
	EDUCATION	CHEM 591	Introduction to Chemical Education Research	1.5	Spring
	OTHER	CHEM 698	Investigations in Current Chemistry Literature	1.0	Fall & Spring
NON-DIDACTIC		CHEM 690	Research Seminar	1.0	Fall & Spring
		CHEM 692	Seminar Presentation	1.0	Fall & Spring
		CHEM 693	Chemistry Perspectives and Ethics	1.0	Fall
		CHEM 697	Directed Research	1.0 to 11.0	Fall & Spring



Financial support in the form of TA is not available beyond the 5th year (or 4th year for students entering with MS) and **the appointment will be revoked if your teaching performance is unsatisfactory (*i.e.* being late, unprepared or missing class).** If you leave the program, **provide written notification to the Graduate Director to prevent having to pay the tuition** initially waived. Cumulative exams are scheduled on the morning of the second Saturday in February, March, April, September, October and November, with actual dates posted on Blackboard. Not passing the cumulative or oral candidacy exams on time will result in restriction to terminal MS. The stipend for MS is lower than PhD and tuition is slightly higher, so that a reduction of monthly salary will occur for students restricted to MS. If unable to recover a graduate GPA < 3.0 within one semester, a student will lose the assistantship (TA or RA) and the only option for continuation is self-support. Nevertheless, graduation will not be approved unless GPA ≥ 3.0.

A summary of course requirements and general policy for the program is described in the VCU Graduate Bulletin at:
http://bulletin.vcu.edu/graduate/college-humanities-sciences/chemistry/chemistry-phd/#degreerequirementstext
Specific departmental guidelines can be found in the Chemistry Graduate handbook at:
http://chemistry.vcu.edu/graduate-programs/graduate-handbook/ Policy described in the Bulletin may supersede the handbook.

A timeline of the PhD program by semester can be found at: http://chemistry.vcu.edu/graduate-programs/chemistry-phd-timeline/

You will get an Unsatisfactory "U" grade (two U's lead to dismissal) in Directed Research CHEM 697, if you do not:

- *Take the corresponding undergraduate or graduate core courses to remedy knowledge deficiencies revealed in the proficiency exams. This must be your priority for coursework during the first year.*
- *Select and notify your advisor choice to Department Chair and Graduate Administrative Assistant by December 1 when starting in Fall, and by May 1 when starting in Spring.*
- *Notify your thesis committee selection (consult with advisor) to Graduate Administrative Assistant by February 1 if starting in Fall, and by September 1 if starting in Spring.*
- *Present literature seminar and attain 5 pts in the cumulative exams by the end of the 4th semester.*
- *Make timely and competent progress on your research thesis in the form of submitted journal articles, presentations at conferences, etc., as assessed by advisor and/or thesis committee.*
- *Present your research progress during the Graduate Poster Session every year in the Department, starting after the first summer in the program.*
- *Complete oral candidacy exam no later than the end of the 5th semester*

I, _____, hereby declare that I have read and fully understood the terms and requirements of the Graduate Chemistry Program at Virginia Commonwealth University.

_____

Signature Date

Annual Research Report for Graduate Students
Due on September 30th by E-mail to Graduate Director
(Save file as LastNameResearchReport2017-2018.doc)

Student:
Advisor:
Report Period: *August 2017 to August 2018*

Format for Poster or Oral presentation:
Author 1; Author 2; etc. "Title of Presentation". In Title of the Collected Work, Proceedings of the Name of the Meeting, Location of the Meeting, Date of Meeting; Editor 1, Editor 2, etc., Eds.; Publisher: Place of Publication, **Year**; Abstract Number, Pagination.
Example:
Kaplan, L.J.; Selder, A. "Structure and Reactivity of Surfaces". *Books of Abstracts,* 213th ACS National Meeting, San Francisco, CA, April 13-17, **1997**; American Chemical Society: Washington, DC, 1997; CHED-824.

Format for Article in Scientific Journal:
Author 1; Author 2; Author 3; etc. "Article Title". *Journal Abbreviatio*n **Year**, *Volume*, Inclusive Pagination.
Example:
Evans, D. A.; Fitch, D. M.; Smith, T. E.; Cee, V. J. "Application of Complex Aldol Reactions to the Total Synthesis of Phorboxazole B". *J. Am. Chem. Soc.* **2000**, *122*, 10033-10046

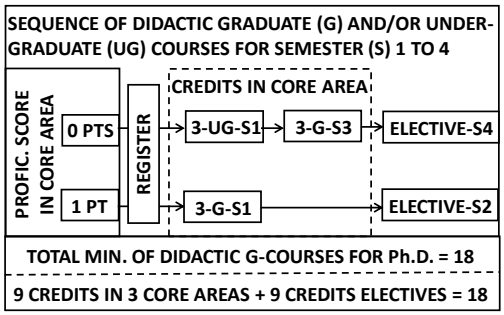
Poster Presentations *(do not include Poster session from VCU Chemistry Department):*

Oral Presentations:

Publications:

Other:

Course Placement Form PhD Program Chemistry Department
Graduate Evaluation and Advising Committeem (GEAC)



REGISTRATION OF NON-DIDACTIC G-COURSES FOR S 1 TO 10

CHEM 690 – S 1 TO 10 WHEN NOT PRESENTING SEMINAR
CHEM 692 – ONLY WHEN PRESENTING SEMINAR (S 4 & 10)
CHEM 697 – S 1 TO 10, TOTAL MIN. 30 CREDITS (CR)
CHEM 693 – ONCE IN S 1 OR 2
THIS TABLE ASSUMES YOUR LAST SEMESTER IS S10 (5 YEARS)

MIN. # OF GRADUATE CREDITS/S TO RECEIVE STIPEND = 9
DO NOT REGISTER MORE THAN TOTAL 15 CREDITS/S
UG CREDITS DO NOT COUNT FOR Ph.D.
O = ORGANIC, I = INORGANIC, P = PHYSICAL, A = ANALYTICAL

DIDACTIC CHEM COURSES		G (CR)	UG (CR)
CORE AREA	O	504 (3.0)	302 (3.0)
	I	620 (3.0)	320 (3.0)
	P	510 (3.0)	304 (3.0)
	P	511 (3.0)	303 (3.0)
	A	630 (1.5)	
	A	631 (1.5)	
	A	633 (1.5)	409 (3.0)
	A	635 (1.5)	
	A	636 (1.5)	
	A	637 (1.5)	
		698 (1.0)	

If not getting 0 in any of the proficiencies, select 9 G-credits in three of the four core areas. You can leave out one area with a proficiency score of 2 but must include any area with a score of 1. Register the corresponding UG-course in the area you got a 0, but a C in such a course would require to follow with a G core course in that area. You are encouraged to take 9 credits of didactic courses per semester, starting with the mandatory core in areas with 0 or 1 proficiency, first. Didactic courses of 3.0 and 1.5 credits run for whole and half-semester, respectively. To receive stipend, you must register a minimum of 9.0 graduate credits per semester and maintain a GPA of 3.0 or ≥B. However, when still taking didactic courses **register 12 graduate credits in case of cancelations.** Every semester, add CHEM 697 credits as needed but do not go over 15 credits total per semester. **If admitted on a 12-month basis, register 3 credits of CHEM 697 in your first summer of the program, but abstain from doing that if admitted on a 9-month basis.** Enroll in CHEM 693 during the first year and in CHEM 698 before your first departmental seminar (S4). Register CHEM 690 every semester, except the semester you present a departmental seminar when you must register CHEM 692 instead. Do not drop courses without Graduate Director's consent and keep track of your progress through Degree Works using your VCU ID in e-services.

FALL SEMESTER

*CRN	Course	Title	Credits
11514	CHEM 690	Research Seminar in Chemistry	1.0
24451	CHEM 693	Chemistry Perspectives and Ethics	1.0
	CHEM 697	Directed Research	
		TOTAL	

SPRING SEMESTER

11514	CHEM 690	Research Seminar in Chemistry	1.0
	CHEM 697	Directed Research	
		TOTAL	

SUMMER YEAR 1 (REGISTER ONLY IF ADMITTED ON A 12-MONTH CONTRACT; BUT DO NOT IF ON A 9-MONTH CONTRACT)

	CHEM 697	Directed Research	3.0

*Course Registration Number (CRN) can be found at www.vcu.edu by typing "Schedule of Classes" in the search field.
August 23 -Classes begin **August 23-29** –Add/drop and late registration

To do list:

- E-mail Rhea Miller (*rmiller3@vcu.edu*) ASAP using your VCU email so you can be added to the Blackboard database. Stop by her office, Oliver Hall 3039, to get keys and access to your mailbox in the copy room (Oliver Hall 3053).
- Check your VCU email and mailbox at least two times per day as important information regarding your TA assignment and/or Courses will be sent to you. Inform Dr. Sally Hunnicutt (*sshunnic@vcu.edu* Room 3035) of any conflict between your course and TA schedules.

---------- ---------- ---------- ----------

Student Name (print) **Signature** **Date** **GEAC APPROVAL**

UNDERGRADUATE DIDACTIC CORE COURSES (If getting a zero proficiency score)

Area	Name	Offered	Credits
Organic	CHEM 302 Organic Chemistry	Fall & Spring	3.0
Inorganic	CHEM 320 Inorganic Chemistry	Fall & Spring	3.0
Physical	CHEM 303 Physical Chemistry I	Fall & Spring	3.0
Physical	CHEM 304 Physical Chemistry II	Fall & Spring	3.0
Analytical	CHEM 409 Instrumental Analysis	Fall & Spring	3.0

GRADUATE COURSES OUT OF APPROVED CORE/ELECTIVES BUT USEFUL

GRAD 610	Career and Professional Development
GRAD 614	Introduction to Grant Writing
GRAD 615	Careers in Biomedical Sciences
EGMN 570	Effective Technical Writing

Examples of course-plans for different proficiency outcomes:

Prof. scores: O = 2; **I** = 2; **P** = 1; **A** = 0; **Specialization:** Organic				
S1	**S2**	**S3**	**S4**	**S5**
CHEM 409 (3.0)	**CHEM 631 (1.5)**	CHEM 601 (3.0)	CHEM 692(1.0)	CHEM 690(1.0)
CHEM 510 (3.0)	**CHEM 633 (1.5)**	CHEB 620 (3.0)	CHEM 697 (8.0)	CHEM 697 (8.0)
CHEM 504 (3.0)	CHEM 604 (3.0)	CHEM 690 (1.0)		
CHEM 693 (1.0)	CHEM 698 (1.0)	CHEM 697 (5.0)		
CHEM 690 (1.0)	CHEM 690 (1.0)		LIT. SEMINAR	ORAL EXAM
CHEM 697 (3.0)	CHEM 697 (4.0)	CUMES		
G-credits =11.0	**12.0**	**12.0**	**9.0**	**9.0**
6.0 + 7.0 + 6.0 = 19 didactic total (Min. 18 for PhD)				

Prof. scores: O = 2; **I** = 2; **P** = 1; **A** = 1; **Specialization:** Analytical				
S1	**S2**	**S3**	**S4**	**S5**
CHEM 635 (1.5)	CHEM 631 (1.5)	CHEM 698 (1.0)	CHEM 692(1.0)	CHEM 690(1.0)
CHEM 636 (1.5	CHEM 633 (1.5)	CHEM 690 (1.0)	CHEM 697 (8.0)	CHEM 697 (8.0)
CHEM 510 (3.0)	CHEM 506 (1.5)	CHEM 697 (7.0)		
CHEM 504 (3.0)	CHEM 606 (1.5)			
CHEM 693 (1.0)	CHEM 511 (3.0)		LIT. SEMINAR	ORAL EXAM
CHEM 690 (1.0)	CHEM 690 (1.0)			
CHEM 697 (1.0)	CHEM 697 (2.0)			
	← CUMES			
G-credits =12.0	**12.0**	**9.0**	**9.0**	**9.0**
9.0 + 9.0 + 1.0 = 19 didactic total (Min. 18 for PhD)				

How to Dispose of Hazardous Waste

If you are using Hazardous Products or Materials, (flammable, corrosive, toxic, reactive) You are more than likely creating hazardous waste that needs to be disposed of properly.

Waste containers need to be compatible with what is being stored inside, especially the LID!

A waste container is no good to anyone if the lid is corroded away by the hazardous waste inside

Storing Hazardous Waste

All waste containers need to be stored in some form of secondary containment (bucket, tray) in case of breakage)

While in Secondary Containment each waste container needs to be labeled with the label below (labels available in Chemistry Stockroom)

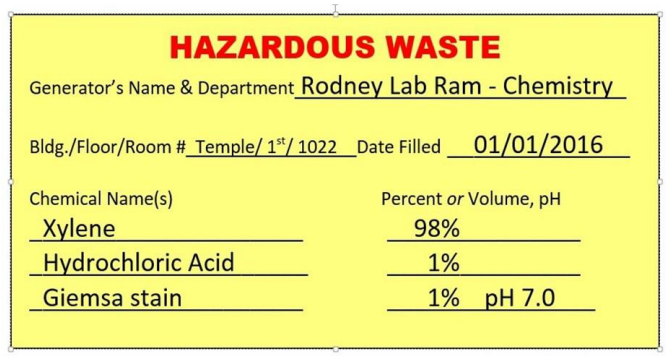
This does not have to be a complete and de-tailed list of what is inside the waste bottle, just a generic description, (Acidic, Basic, Or-ganic Solvents) Just so someone coming in the lab has an idea what is inside if they need to.

Waste bottles and the Secondary Containers need to be kept in a clean, neat and segregat-ed part of the hood. They need to be closed when not in use, no funnels left inside the bottles.

Final Labeling of Hazardous Waste,

Make sure the waste is labeled with the final label as seen below (labels available at link below VCU SRM under the forms heading)

https://srm.vcu.edu/i-want-to-know-about/waste-management/



Make Sure the label is filled out with the
Name of the Generator
Department
Building/Floor/Room Number
Date it was filled
Chemical Contents (NO ABBREVIATIONS)

Scheduling a Waste Pickup

Once all this filled out and taped securely on-to the waste bottle, visit the website below and follow the prompts for scheduling a pickup through VCU SRM

https://redcap.vcu.edu/surveys/?s=CNF7FWH4LE

All this information applies for both solid and liquid hazardous waste.