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Disclaimer

The information given in this document is intended to be an accurate description of the requirements of the various Chemistry graduate programs. The contents of this document are expected to evolve somewhat over time.

The users of this document should keep the following in mind.

1. If the document contradicts itself by setting forth mutually exclusive requirements, then the issue will be resolved, and the valid practice determined, at the time of application of the requirements by the Chemistry Graduate Committee and Chemistry Graduate Program Director.

2. If the document sets forth requirements or policies which conflict with Villanova University's College of Liberal Arts and Sciences Graduate Studies policies or University policies, then the policies from these administrative units take precedence over the Chemistry Department policies.

3. If the document contains a policy or regulation which, at the time of its application, is deemed not to be in the best interest of the student pursuing an advanced degree in Chemistry, then the Chemistry Department has the right to change the policy, announcing the change to all graduate students and faculty, and incorporating the change into the next edition of these rules and regulations.
Introduction

While the intent of a program of study leading to the Master’s Degree in Chemistry is to prepare students to be capable and independent chemists, orderly progression through the program demands that there be policies or rules and procedures. The policies and procedures for the Chemistry program are spelled out in this document. In addition, useful guidelines are also given which, while not defining policy, define good practice. It should be noted that some of the requirements stated in this document reflect Villanova University’s College of Liberal Arts and Sciences Graduate Studies requirements (referred to as Graduate Studies in this document) and others are Chemistry Department requirements.

Admission Requirements (Full-time and Part-time):

When a student submits an application, the Chemistry Graduate Committee evaluates the application. The committee decides on whether to accept or reject the application, on whether to accept as matriculated or non-matriculated, and on whether to award a teaching assistantship if one has been requested (for full-time students only). Generally, students who apply for the full-time program will not be accepted without the award of an assistantship. The committee’s recommendation is submitted to Graduate Studies which, in its turn, evaluates the application. The applicant is informed in writing by Graduate Studies about the outcome of their application.

Undergraduate Degree Requirements:

The student must have a bachelor’s degree in a science discipline, or its equivalent. This degree may be certified by the Committee on Professional Training of the American Chemical Society, or be a bachelor’s degree in any area, presenting acceptable credits for one year of study in both general chemistry and organic chemistry as well as at least two additional upper-level chemistry classes, for example one semester of study each in analytical chemistry and physical chemistry. Mathematics through integral calculus and one year of physics are also expected. Generally, students who have a Bachelor’s Degree in Chemistry will have the necessary course prerequisites for admission into the program. Students having a degree in some other scientific discipline would do well to contact the Chemistry Graduate Program Director to discuss deficiencies in course prerequisites and to devise a plan for remedying deficiencies either before or after acceptance into the program.

Undergraduate GPA Requirements:

An undergraduate grade point average (GPA) of 3.0 or greater on a 4-point scale is required for admission by Graduate Studies. However, admissions are holistic, and students with GPA’s below 3.0 may still be considered (see also Non-Matriculated Status below).

The Graduate Committee also examines the GPA for science and chemistry courses and considers these in addition to the overall GPA.
Graduate Record Exams:

The Graduate Record Exam (GRE) is optional for graduates of accredited U.S. undergraduate institutions but can be submitted if desired. The GRE is required for international applicants who are not graduates of accredited U.S. undergraduate institutions.

International Students:

Graduate Studies and the Chemistry Department have additional requirements for international applicants. The Graduate Record Exam (GRE) requirement for international applicants is described in the “Graduate Record Exams” section of this document. A complete and current list of Graduate Studies guidelines for international applicants may be found on the Graduate Studies web page.

One guideline for international applicants that is particularly relevant for the Chemistry Department is proof of English proficiency. The current policy is summarized below. If there is an apparent conflict in policy, refer to the Graduate Studies web page for current guidelines.

Proof of English Proficiency

International applicants do not need to submit the TOEFL, IELTS or Duolingo English Test (DET) if the applicant meets any of the following criteria:

- You are a citizen of Australia, Canada, the UK, Ireland, or New Zealand.
- You earned your prior college or university degree in the United States or one of the countries listed above.

International applicants do need to submit the TOEFL, IELTS or Duolingo English Test (DET) if the above criteria are not met. For these applicants, English language proficiency can be demonstrated by submitting official test results directly to the Graduate Studies Office either from an in-person administration of TOEFL iBT or IELTS, or the online DET.

Minimum required test scores for the Chemistry Department are as follows: a score of 80 or higher on the TOEFL, a score of 6.5 or higher on the IELTS, or a score of 120 or higher on the DET.

The ability to speak and understand both spoken and written English is crucial for success in the Chemistry MS program. First, lectures are given in English. Second, graduate students who are teaching assistants must be able to communicate with the undergraduates in their charge. Finally, thesis track students must submit a written thesis using acceptable English prose to graduate.

A second guideline for international applicants that is also relevant for the Chemistry Department is the Credential Evaluation. The current policy is summarized below. If there is an apparent conflict in policy, refer to the Graduate Studies web page for current guidelines.

Credential Evaluation

Villanova requires that transcripts from colleges and universities outside the U.S. and Canada undergo a course-by-course analysis by an expert academic credential evaluator in the United States. Students are responsible for paying all fees for such evaluations and making arrangements with the credential evaluation company to send and receive their documents. Fees vary depending on the evaluator and whether a translation is needed. If you are using the service of a credential evaluator that has the
capability to send the credentials evaluation electronically, please instruct them to send it to gradinformation@villanova.edu; otherwise, please use the mailing address below. Villanova will accept a course-by-course credential evaluation from any NACES member.

The following credential evaluators offer electronic delivery:
International Education Evaluation
International Education Research Foundation
Josef Silny & Associates, Inc.
SpanTran
World Education Services (WES)

Transfer Credit: International students who request to transfer credits from a college or university outside of the U.S. or Canada must submit a credential evaluation for those courses.

Matriculated vs. Non-Matriculated Status

If an applicant fulfills the requirements for acceptance into the graduate program, the applicant is accepted as a matriculated student. This status implies that the student may register for all the courses needed to complete the degree requirements and is subject to all the policies associated with the program. If the applicant fails to meet all the standards for acceptance into the program or fails to submit all the needed credentials (transcripts, letters of recommendation, statement of purpose, etc.) the Chemistry Graduate Committee may recommend that the student be accepted as a non-matriculated student. A non-matriculated student normally is allowed to take two Chemistry graduate courses with the requirement that a B average (3.00) is attained for the two courses. In the case where non-matriculated status was granted because of missing credentials the Chemistry Graduate Committee will reexamine the complete credential package as well as the grades for the graduate courses taken and decide whether to admit the student to matriculated status. In the case where non-matriculated status was granted because of failure to meet stated standards, the Chemistry Graduate Committee will examine the grades for the graduate courses taken and decide whether to admit the student to matriculated status. The Graduate Studies policy about student status categories may be found here.

Thesis and Non-Thesis Options

There are two completion options available to students. The thesis option is the option recommended for students who wish to continue their education full-time and pursue research. Normally such graduate students are supported by teaching or research assistantships or fellowships. The non-thesis option is intended primarily for chemists who entered the workplace full-time upon obtaining their bachelor's degree and who wish to further their careers by means of the MS degree. The thesis research requirement and associated four “research courses” are replaced by additional coursework. In special cases, students employed full-time in the chemical industry may be able to arrange thesis research at their place of employment; such students may elect the thesis option. Note that the course requirement for each option is different (see below).
Part-time vs. Full-time Status

In addition to the classifications given above, the Chemistry Department also distinguishes between “part-time” and “full-time” statuses. Ordinarily, a full-time student is a student who (1) is registered for one or more courses, including “research courses”, (2) is committed to working in the laboratory on a thesis project on a full-time basis, and (3) is performing services as a teaching assistant or as a research assistant. The full-time student spends the equivalent of a normal work week functioning as a Chemistry graduate student; the Graduate Studies policy about full-time status may be found here. A part-time student is generally a student who is only involved with the program through being enrolled in one or two courses per semester and who is not involved as a teaching assistant or research assistant. The part-time student is most often the non-thesis option student who is gainfully employed full-time elsewhere.

If a student is required to have a letter written (for insurance purposes, etc.) verifying his or her full-time status, the student should provide both the request and necessary information to the Chemistry Graduate Program Director or the Department Chairperson.

Requirement Summary

**THESIS OPTION:** A minimum of 30 course credits are required:

1. Choose 2 core courses – 6 credits – from the 5 below:
   a. CHM 7292: Core Organic Chemistry
   b. CHM 7391: Core Inorganic Chemistry
   c. CHM 7494: Core Physical Chemistry or CHM7100: Quantum Mechanics
   or CHM7200: Thermodynamics/Statistical Mechanics
   d. CHM 7595: Core Analytical Chemistry
   e. CHM 7693: Core Biochemistry

2. Choose 4 elective courses – 12 credits
3. CHM 7807, 7808, 7809; MS Research I, II, III – 9 credits
4. CHM 7810; MS Thesis – 3 credits
5. Satisfactory research, progress seminar, thesis defense, and thesis submission

Students completing the above course requirements with a total of thirty (30) credits and who find themselves finishing thesis research in subsequent semesters, must enroll in CHM 9080, Thesis Continuation – 0 credits.
**NON-THESIS OPTION:** The non-thesis option is available only to part-time students who do not have the opportunity to conduct thesis research at Villanova University or their place of employment. As with the Thesis MS degree, a minimum of 30 course credits are required:

1. Choose 3 core courses – 9 credits – from the 5 below:
   a. CHM 7292: Core Organic Chemistry
   b. CHM 7391: Core Inorganic Chemistry
   c. CHM 7494: Core Physical Chemistry or CHM7100: Quantum Mechanics or CHM7200: Thermodynamics/Statistical Mechanics
   d. CHM 7595: Core Analytical Chemistry
   e. CHM 7693: Core Biochemistry

2. Choose 7 elective courses – 21 credits

**ALL STUDENTS:** All students must maintain a 3.0 overall GPA to stay in the program. The degree requirements must be completed within 6 years.

**GPA Requirement**

A student must maintain a GPA (grade point average) of at least 3.00 to complete the degree requirements and be approved for graduation. Note that the GPA affects eligibility to proceed through various steps of the program. If a student’s GPA falls below 3.0, the student will be notified by letter that they are on academic probation, and they will be informed how many credits will be allowed to bring the GPA above 3.0 to remain in the program. This is a Graduate Studies requirement, and more details appear on the Graduate Studies web page.

The research course CHM 7807 (Research I) receives a letter grade (assigned by the Chemistry Graduate Program Director) upon successful completion of the progress seminar that will be included in the calculation of the GPA; if CHM 7807 is taken prior to completion of the progress seminar, a grade of IP (in progress) will be assigned. If the progress seminar was unsuccessful but will be repeated later, a grade of incomplete may be assigned. The research courses CHM 7808 and 7809 (Research II and III) receive a grade of S (satisfactory) or U (unsatisfactory). The final research course CHM7810 (MS Thesis) will receive a grade of IP until the thesis has been submitted and approved by the Chemistry Department and Graduate Studies, at which point it will receive a grade of S. If necessary, a zero-credit class (CHM 9080; Thesis Continuation) can be enrolled in if the thesis is not completed in the semester CHM 7810 is taken. These research classes (except for CHM 7807) do not receive grades which can be included in the calculation of the GPA.

Students whose GPA fails significantly below 3.00 early in the program should realize that their likelihood of completing the program is jeopardized. Poor grades are cause for dismissal from the program, especially if it is unlikely that future performance will bring the average to the needed 3.00 value. Please see the Graduate Studies policy on Academic Probation for more information. If a student who holds a graduate assistantship, tuition scholarship or fellowship is placed on academic probation, the award is automatically rescinded according to Graduate Studies policy.

Research is a significant part of the training process and should involve the solving of a substantial chemical problem. The results of the research project will be presented to the Chemistry Department in the form of a written thesis and in the form of a public presentation at which questions will be asked by the audience. It is expected that the work will be of sufficient quality to form a significant contribution to a publication in a peer-reviewed journal and/or to be presented at external meetings or conferences.

Choice of Project, Research Director, and Advisory Committee:

It is strongly suggested that students begin conducting research during the first semester of study. To facilitate the matching of students with Research Directors, students are required to make appointments to discuss research with three faculty members during August and September (for those starting in the Fall) or January and February (for those starting in the Spring) using the Research Advisor Interview form, which should be signed by all the faculty and returned to the Chemistry Graduate Program Director or Administrator. By September 30th (or February 15th) students will submit this form as well as a list of their top three choices (ranked from 1 to 3) for Research Advisor to the Chemistry Graduate Program Director. The Chemistry Graduate Program Director, in consultation with faculty, will then assign students to labs, trying to ensure that as many students as possible get their first choices of Research Advisor while simultaneously being responsive to faculty needs and lab space. Students will be notified of decisions by Fall (or Spring) Break. Note that there is nothing to prevent a student, with the support of a faculty member, from conducting research in a lab prior to the match process on a trial basis.

Once a lab has been joined and a project decided upon, the student will fill out the Choice of Research Director form, which should be submitted to the Chemistry Graduate Program Director by October 31st (or March 15th). The student should also carefully read the Statement on Research that accompanies this form. In consultation with the Research Advisor, the student will ask two additional faculty members (at least one of whom is a member of the Chemistry Department) to serve on the advisory committee or thesis committee. Full-time Continuing faculty (Assistant, Associate, or Full Teaching or Research Professors) can serve as advisory committee members or co-advisors but cannot serve as the primary Research Advisor. Note that in the case of co-advisors, two additional members of the advisory committee are still needed. The form will be placed in the student’s file and represents a formal commitment between the student and faculty member to conduct and direct the research project, respectively.

The student should normally expect to complete his or her research project under the direction of the faculty member signing the agreement. In rare cases, poor performance on the part of the student, personality clashes, changes in interests, etc. may necessitate a change in research project and Research Director. Such a change may be initiated by either the student or the faculty member. The initiator of the change must inform the Chemistry Graduate Program Director in writing expressing the desire for a change and spelling out the reasons for the change. The Chemistry Graduate Program Director will consult with the Graduate Committee and indicate the approval of the change by placing a dated signature on the letter and placing it in the student’s file. In addition, a notation will be made on the original commitment form indicating the date that the commitment was terminated. The student must see to it that a new commitment form is filled out and signed and submitted to the Chemistry Graduate Program Director. It is important to note that changing a project and Research Director will normally
cause research work performed before the change to be ignored and will add to the time it takes to complete the degree requirements. Note that Graduate Studies limits Teaching Assistantships to four semesters, making funding past two years difficult.

Advisory Committee:

At the time the student chooses a Research Director, the student, in consultation with the Research Director, will choose two faculty members who will serve on the student’s advisory committee or thesis committee. The Research Director will be the principal advisor to the student. The advisory committee will serve principally as evaluators of the student’s progress on his or her thesis research and will serve as the Readers of the student’s thesis.

Students entering the program in September, including BS/MS students, will give a seminar describing the progress of their research during the following June or July (generally while signed up for CHM7807). Graduate students with undergraduate research experience at Villanova University, such as BS/MS students, are encouraged to give their progress seminar early in this timeframe and can present in May if their Research Director approves. The progress seminar typically consists of background material, an introduction to the specific project being pursued, progress so far, and plans for completing the research project. The Research Director and advisory committee members will attend the seminar. The Research Director will also specify written requirements to be delivered to the committee, for example a draft of the Introduction to the Thesis or a Thesis Proposal describing the research plan going forward. (Students entering the program in January will undergo this process in the Fall semester of their first year and preferably in October or November). The advisory committee will meet and assess the student’s progress. The advisory committee (along with the Research Director) will record their evaluation on the Evaluation of Seminar form, which will be placed in the student’s file. Evaluation of the progress seminar will indicate whether the research effort to date is satisfactory and, if it is not, will spell out the ways in which it is not satisfactory and provide recommendations forremedying deficiencies. The student will be graded as having 1) passed, b) passed with recommendations (to be dictated by committee), c) fail (literature/background), d) fail (research results/effort) or e) fail with a recommendation to be released from the program. In the case of c) the student will present another seminar thoroughly discussing the background of the project. In the case of d) specific case-by-case requirements will be presented to the student that will allow him/her to continue in the program, (i.e., regular examination of notebook, timesheet, contract, monitored research goals).

The seminars given by the student should be true research seminars. The student should receive some instruction on how to make a presentation and how to use technology to his or her advantage. Thus, in addition to assessing the content of the seminar, the advisory committee will assess the effectiveness of the presentation itself. In the event of an ineffective presentation, the advisory committee will make remedial recommendations and can require an additional presentation in which deficiencies will be remedied. In the case of inadequate or poor written requirements, the committee may also require revisions. The progress seminar will serve as the basis for the letter grade received in CHM7807 (Research I).

Thesis:

The culmination of the research project is the written thesis. The thesis is written when the Research Director declares that an acceptable project has been completed. Regarding general format, the student should familiarize himself or herself with bound copies of theses present in the Department’s
library. These can serve as guides for format and content. However, the student should obtain a copy of the *General Style Guidelines* for theses published by Graduate Studies as well as a copy of *The ACS Style Guide: A Manual for Authors and Editors*, published by the American Chemical Society. The former document spells out the specifics for margins and format required by Graduate Studies. The *ACS Style Guide* has a wealth of information about the format of graphs, tables, and equations as well as information about abbreviations, punctuation, and spelling. The Chemistry Department will also make available a template for student use; this template may be found on the *Current Student & Faculty Resources* SharePoint site which may be accessed from the Villanova University Department of Chemistry and Graduate Program in Chemistry web pages. Students are urged to verify that this template does indeed satisfy the requirements (i.e., that no Graduate Studies requirements have changed).

It is expected that the thesis is written in grammatically correct English with correct spelling and punctuation. Students who are uncertain about their writing style, especially students for whom English is not their first language, should have the thesis read and checked for style and grammar by another person who can competently make the necessary corrections. It is not the place of the Research Director or advisory committee members to make corrections of style and grammar, these should be taken care of before submitting the thesis to the Research Director and advisory committee. Instead, students are encouraged to contact the *Villanova University Writing Center* for writing assistance. Either the Research Director or advisory committee members may return the thesis for grammatical revision if they judge that too many errors occur in the writing style.

The thesis submitted to the Research Director should be complete. That is, it should have all chapters, tables, figures, references, table of contents, etc. However, the Research Director may agree to accept the thesis in stages if this serves the interest of both student and the Research Director. Once the Research Director deems that the thesis is complete or is close enough that it will be complete by the time of the thesis defense, the thesis defense date can be scheduled. Thesis defense dates CANNOT be scheduled until the Research Director has received a draft of the thesis and given approval for the thesis to go forward. The complete thesis should be submitted to the Chemistry Graduate Program Director and the thesis Readers (i.e., the members of the advisory committee). The Chemistry Graduate Program Director and Readers MUST receive the thesis two weeks before the scheduled oral defense date, although, with the permission of the committee, this can be pushed back to one week before the defense date for the Readers. When the Readers have read the thesis, the Readers will provide written and/or oral feedback on any issues with the thesis to the student and Research Director. If the issues are significant, the Readers may require that the thesis be revised and resubmitted before proceeding with the defense and it may be necessary to involve the Research Director in the discussion of revisions. If the Readers agree to proceed with the defense despite the need for a revision, it is expected that the Readers will have sufficient time to check and approve the revisions when they are made. Sufficient time for the Research Director and Readers to assess the original thesis and subsequent revisions should be kept in mind when trying to meet University and (College) Graduate Studies graduation deadlines for thesis submission. It should not be expected that the process will be rushed so that graduation will occur on a desired date.

When the thesis is approved and signed by the Research Director and Readers, signature pages (signed by the Research Director and Readers) are submitted to the Department Chairperson for signature and then to Graduate Studies. Please review the *Graduate Studies web site* for specific instructions on the process and deadlines for thesis submission.
Teaching Assistants:

Most thesis option graduate students are teaching assistants (TAs). Teaching assistants are governed by a Graduate Studies policy which may be found at the Graduate Studies web site. Graduate Studies states that approximately twenty hours per week of teaching related activities are expected. It also states that, while holding a teaching assistantship, no other employment may be had by the assistant.

The Chemistry Department depends very strongly on the work provided by teaching assistants. The proper running of laboratories calls for constant supervision of enrolled students by the teaching assistants. Teaching assistants must contact the faculty member in charge of laboratories and obtain specific charges concerning duties.

A general description of the responsibilities of teaching assistants follows with the understanding that individual responsibilities may vary somewhat.

Laboratory instruction – Students are assigned to act as teaching assistants in undergraduate (or occasionally graduate) Chemistry laboratory classes. Typically, students are assigned to TA three lab sections (or the equivalent) per semester. To complete their duties (details depending on the class and professor for whom the student is TAing), the students must:

- Review the assigned experiments before each laboratory period and be prepared to answer student questions on experimental procedures, notebook preparation, waste disposal, and safety.
- Show up before the beginning of the laboratory period to set up anything required for that day's experiment. A minimum of 15 minutes ahead of time is standard practice.
- Take attendance.
- Proctor laboratory quizzes.
- Monitor the students as they complete their experiments, taking special note to the proper use of equipment and supplies, the appropriate use of personal protective equipment, and adherence to safe laboratory practices.
- Ensure that students are working independently without unauthorized collaboration or “sharing” of laboratory data.

Grading – Graduate students are responsible for grading laboratory assignments in most lab classes; these can range from worksheets to full lab reports. Generally, faculty will provide students with rubrics for grading. Occasionally a student is assigned to be a grader for a non-laboratory course, in conjunction with proctoring (when requested by the Chemistry Graduate Program Director).

Laboratory preparation – In addition to getting everything ready for the day’s experiment (part of the routine duties of a TA), some students will be assigned “prep TA” duties in lieu of a lab section. The prep TA is responsible (typically working alongside a Chemistry staff or faculty member) for preparing all the reagents for a multi-section lab class and managing proper chemical waste disposal. Also, for lab courses for Chemistry majors, Biochemistry majors, and for Mendel Science Experience courses (MSE), the prep TA is also responsible for maintaining the Life Safe Box packets for the course.

Each Life Safety Box packet must contain:

- coversheet on the outside of the envelope (template provided by the Chemistry Department’s Safety Officer)
- the protocol for the experiment
• Safety Data Sheet for every chemical being used in that experiment (you can obtain them using the University’s Chimera database)

Contact the Chemistry Department’s Safety Officer to learn more about the Life Safety Box requirements.

Summer:

Full-time students remain on campus during the summer between the first and second years to conduct research. Students who are in good academic standing in the spring semester of the first year are eligible for summer funding support from the Office of Graduate Studies. Graduate Studies policy states that approximately twenty hours per week of laboratory research support is expected; stipend payments are released at the end of June and July. In addition, students are highly encouraged to apply for the competitive Graduate Summer Research Fellowship (GSRF) program to be considered for a Graduate Summer Research Prize Award. Students who receive a Graduate Summer Research Prize Award will receive this award in addition to their June and July summer stipend payments from Graduate Studies. Students may also submit their GSRF application and a personal statement of career goals to the Chemistry Graduate Program Director to be considered for competitive endowed Chemistry Department funding known as the Dr. Rosemarie Teresa Greyson-Fleg ’69 Chemistry and Dr. Jerome Fleg Endowed Fund for Graduate Student Research in Chemistry. Students who receive “Fleg funding” will receive a monetary prize, research supply funds, and conference travel funds. Students who receive “Fleg funding” will receive this award in addition to their June and July summer stipend payments from Graduate Studies. Students who are ineligible for summer funding support from the Office of Graduate Studies will be considered for summer TA assignments, which brings additional salary beyond the academic year (Fall and Spring) stipend.

Chemistry Graduate Program Policies for Current Students

Advising Process:

The Chemistry Graduate Program Director is the advisor for new thesis option students until the time they choose their Research Director (and remains the academic advisor throughout their course of study). The Chemistry Graduate Program Director is the advisor for the non-thesis option students throughout their course of study. Students should feel free to consult with their advisor about program matters at any time.

Time Limitations:

Graduate Studies requires that students complete all their degree requirements within six years. Teaching Assistantships for thesis option students are limited to two years. Thesis option students who have completed all requirements other than the thesis must enroll in a 0-credit thesis continuation class (CHM 9080, Thesis Continuation) until they defend and submit their thesis; these students do not need to pay tuition, and instead must pay a nominal fee to enroll in CHM 9080 and maintain student status.

Transfer of Credits:
Graduate Studies allows the transfer of 6 credits of graduate courses from other schools to be applied to the degree requirements. However, only the credits are transferred, not the grades. Grades for courses transferred from other universities are *not* counted in the student’s GPA.

The student who has already completed one or two courses at another institution can petition the Chemistry Department to accept the course or courses for transfer. *This request must be made at the time of application by using the application software, Slate; no requests will be reviewed after the first semester of enrollment as per Graduate Studies policy.*

If a student seeks transfer of credits from another institution yet did not request it at the time of application, the student may request the transfer no later than the first semester of enrollment. These requests may not be granted and will be evaluated on a case-by-case basis. A *Transfer of Credit Request form* can be obtained from the Chemistry Department office or from the Graduate Studies web site. This form is to be filled out by the student and sent to the Chemistry Graduate Program Director. This form should also be accompanied by a description of the course(s), including a copy of the catalog description of each course and a course syllabus, as well as a copy of the official transcript giving the grade in the course. If the Chemistry Department approves the transfer, the *Transfer of Credit Request form* will be signed and submitted to Graduate Studies. The student will be notified of the approval and requested to have the Registrar of the school where the course was taken send an official transcript to Graduate Studies.

If an enrolled student desires to take one or two courses at another university, the student must obtain written pre-approval from the Chemistry Graduate Program Director and Graduate Dean of Liberal Arts and Sciences. First, the student should contact the Chemistry Graduate Program Director and verbally discuss the transfer. Next, the student should submit a written request for pre-approval of the course providing the Chemistry Graduate Program Director with a course description (a catalog description) and a syllabus. If the Chemistry Department is willing to accept the course for transfer, the Chemistry Graduate Program Director will forward this request to the Graduate Dean of Liberal Arts and Sciences. If the request is accepted by the Graduate Dean, the student is to follow the procedures outlined above for the actual transfer of credit in accordance with [Graduate Studies policy](#).

**Courses from other Villanova Departments:**

Sometimes courses may be available in other graduate programs at Villanova which might be acceptable substitutes for Chemistry graduate course electives. Permission can be given to take these courses; however, the student must obtain permission from the Chemistry Graduate Program Director before signing up for such courses. The student must include a course description (a catalog description) in the request to the Chemistry Graduate Program Director. No more than two such courses from outside the Chemistry Department will be permitted. The courses should be in chemistry-adjacent fields and be relevant for the student’s area of study since the Master’s Degree is a Chemistry degree. For example, a student specializing in biochemistry might find relevant classes from the Biology Department.

**Undergraduates Enrolled in Graduate Courses:**

The Chemistry Department allows Villanova undergraduates to enroll in Chemistry Graduate courses if the student meets the stated requirements from the [University Policy on Undergraduates Enrolling in Graduate Courses](#). Current requirements call for senior standing (in terms of credits), meeting College GPA standards (a minimum GPA of 3.0 is recommended) and permission from the student’s academic
advisor, the Chemistry Graduate Program Director for the course of interest, and the Graduate Dean of Liberal Arts and Sciences. The University policy also states that “If an undergraduate takes a graduate class, in that semester s/he is limited to taking a maximum of 16 credit-hours of work.”

The Chemistry Department recognizes that occasionally a student may seek enrollment in a Chemistry Graduate course even if they do not meet one or more of these University requirements. For example, a high-performing Chemistry or Biochemistry student may be adequately prepared for a Chemistry Graduate course despite junior standing. A student’s GPA may be below 3.0 yet a holistic transcript review may suggest adequate preparation for graduate coursework. Also, many Chemistry and Biochemistry majors enroll in more than 16 credit-hours per semester to fulfill their undergraduate degree requirements; in these cases, the student’s academic advisor can assess whether the student in question has the potential for success in graduate coursework while enrolled in more than 16 credit-hours yet no more than 20 credit-hours.

To initiate the approval process, the undergraduate student must complete the Permission to Enter Graduate Courses Form. In cases where the student does not meet one or more of University requirements, upon receipt of this electronic form the student’s academic advisor and the Chemistry Graduate Program Director will make a holistic assessment of whether a student has the potential for success in graduate coursework and will share their recommendation with the Graduate Dean of Liberal Arts and Sciences for final approval.

Special Cases:

Sometimes circumstances arise which affect the student’s ability to meet the requirements for the master’s degree and some flexibility may be warranted. It is not possible to anticipate all special cases and make provision for them. Should the student believe that he or she needs some adjustment in the way they are fulfilling the requirements, the student should discuss the issue with his or her advisor. After discussion with his or her advisor, the student should then petition, in writing, the Chemistry Graduate Program Director or the Graduate Dean of Liberal Arts and Sciences, for the exception. The student must spell out (1) the requirement for which they are requesting adjustment, (2) the proposed method of making the adjustment, and (3) the reasons which led to the need for the adjustment. After the request has been considered, the student will be notified, in writing, from the Chemistry Graduate Program Director or the Graduate Dean of Liberal Arts and Sciences about the outcome of the petition. The student should keep a copy of this written notification for future reference.
BS/MS Program

The combined BS/MS degree program is intended for Villanova Undergraduate Chemistry and Biochemistry majors. Students apply for this program early during the Spring semester of their junior year. This program has features which are unique from the master's programs described earlier in this document. Students in this program should be aware of these differences (see below).

Students will apply for the program in the second semester of their junior year. The application deadline is typically March 15th. Applicants will be notified on the outcome of their application toward the end of April. The application form and additional information are available on the Department of Chemistry website. All applicable materials, including letters of recommendation, must be received by the deadline for application. Eligible students must meet the following minimum requirements:

- Enrolled in Physical Chemistry lecture and lab and completion pending (CHM 3412/04: Chemistry Majors); or Completed Biochemistry I and lab (CHM 4621/4603: Biochemistry Majors)
- Have an overall GPA of 3.0 or greater
- Have a GPA in math and science courses of 3.0 or greater (technical GPA)

The Graduate Record Examinations (GREs) are not required. Interested students who meet the above requirements must submit an application and three letters of recommendation. The application includes a research statement and a personal statement (total of two pages maximum). Your research statement should include your previous research experience and why research excites you, and your personal statement should include an explanation of your personal and professional goals and your reasons for seeking admission into the BS/MS program. Acceptance into the program is not automatic, and selection of students will be made by a committee comprised of Chemistry graduate faculty. No more than five students will be accepted into the BS/MS program in a given year. It is required that students applying for the BS/MS program discuss it with their potential research advisor first (see below), and strongly recommended that they begin working in that lab no later than fall of Junior year.

Curriculum:

Students will take the normal undergraduate Chemistry or Biochemistry Curriculum in their first three years of study. By the end of their fourth year, students will normally have taken three CHM graduate courses. These three graduate courses will be applied to both the B.S. and M.S. degrees; during the Spring Semester of the student's fourth year, the Chemistry Graduate Program Director will submit the Undergraduates Enrolled in a Graduate Course – Transfer Form to Graduate Studies to complete this request. A 3.0 average must be maintained in the program, including for graduate courses taken in the fourth year. The student will be awarded the B.S. degree after completing the fourth year of study.

At the end of the fourth year, the student is formally accepted into the Chemistry Graduate Program. At this time, the student, in consultation with the Research Director, will choose two faculty members who will serve on the student’s advisory committee or thesis committee. The Research Director will be the principal advisor to the student. The advisory committee will serve principally as evaluators of the student's progress on his or her thesis research and will serve as the Readers of the student's thesis. Note that in the case of co-advisors, two additional members of the advisory committee are still needed. Once the advisory committee has been selected, the student will fill out the Choice of Research Director form,
which should be submitted to the Chemistry Graduate Program Director by the end of the fourth year. The student should also carefully read the Statement on Research that accompanies this form.

During the summer between the fourth and fifth year, the student must return to campus to take additional courses (including at a minimum the CHM7807 research course), conduct research, and complete a progress seminar for their Advisory Committee. In the fifth year, students will take six additional courses (including the research courses CHM7808 and CHM 7809 and the thesis course CHM7810) and complete a research project under the supervision of a faculty mentor. The total number of classes required (10) is unchanged from the standard full-time master’s program.

**Thesis Requirement:**

At the time of application, the student must have already identified a Research Director who must write one of the letters of recommendation indicating their willingness to take the student. Together, the student and Research Director will choose a topic and research will begin no later than Fall of the fourth year of study. Conducting summer research with the Research Director prior to the fourth year of study is highly encouraged. When a student has completed the research, as determined by the Research Director, the student will write his/her thesis and then present a seminar to the entire Chemistry Department.

**Funding:**

Students admitted to the BS/MS program are not formally admitted to the graduate program until the completion of the fourth year. Courses taken during the fourth year are assigned the undergraduate tuition rate. The Chemistry Department currently hires undergraduate students as teaching assistants in undergraduate laboratory courses. Students accepted into the BS/MS program will be given priority for these positions in both semesters of their fourth year of study.

During the Spring semester of the fourth year, students may apply for a Graduate Assistantship for the fifth year. The assistantship will include a tuition waiver for the fourth summer and the fifth year. To be eligible for the Graduate Assistantship, the student must maintain a “B” average (3.0) in the graduate courses taken during the fourth year and meet all other admission requirements.

BS/MS students who are in good academic standing are eligible for summer funding support for the fourth summer from the Office of Graduate Studies. Graduate Studies policy states that approximately twenty hours per week of laboratory research support is expected; stipend payments are released at the end of June and July. In addition, students are highly encouraged to apply for the competitive [Graduate Summer Research Fellowship](#) (GSRF) program to be considered for a Graduate Summer Research Prize Award. Students who receive a Graduate Summer Research Prize Award will receive this award in addition to their June and July summer stipend payments from Graduate Studies.