



**Department of Chemistry**

**M.S. Program Handbook**

**Fall 2018**

## **Program Overview**

The M.S. degree in Chemistry is offered by the Department of Chemistry at the University of Texas at San Antonio (UTSA) as either a Thesis or Non-Thesis option. The primary objective of the M.S. degree is to introduce students to recent advances in the chemistry sub-disciplines, complete a research project in one or two specialized areas, and prepare graduates to participate in and contribute to the chemistry profession in all of its various forms. The Thesis option is recommended for students who are planning a career in research or who contemplate pursuing a doctorate in their program of study. The Non-Thesis option is available for students with other goals.

The curriculum is designed to provide a foundation in advanced contemporary chemistry through the Core and Elective courses. All students are required to take courses in Analytical Chemistry, Biochemistry, Inorganic Chemistry, Organic Chemistry, and Physical Chemistry. Additional required elective courses are normally taken in fields close to the student's area of specialization. The curriculum also includes participation in research seminars and colloquia, teaching opportunities, and interactions with faculty. Students will normally conduct research in the Biotechnology, Sciences and Engineering Building located on the 1604 campus (Main Campus).

### **Disclaimer**

The information contained in this Handbook does not constitute a contract, expressed or implied, between any applicant, student or faculty member and the M.S. program in Chemistry, the Graduate School at The University of Texas at San Antonio or The University of Texas System.

### **Revisions**

The Department of Chemistry reserves the right to alter and/or clarify the requirements and procedures set forth in this handbook at any time. Any changes become effective upon approval by the M.S. and Ph.D. Programs Committee and, if necessary, by faculty vote and

University approval. The changes apply to prospective students and may apply to those already enrolled in the M.S. Program. **Suggestions from students and faculty for improving the contents of this handbook are encouraged.** Please forward your suggestions to the Department of Chemistry's Graduate Advisor of Record (Dr. Ghezai T. Musie, Department of Chemistry, The University of Texas at San Antonio, One UTSA Circle, San Antonio, Texas 78249-0698; [ghezai.musie@utsa.edu](mailto:ghezai.musie@utsa.edu)).

### **Application**

All applications for admission to the M.S. program must be made directly to the Graduate School and not to the Department of Chemistry. The Department of Chemistry encourages potential applicants to contact the Graduate Advisor of Record or other members of Faculty before submitting applications.

#### Deadlines for Admission

##### *Domestic Applicants*

Fall Term – July 1

Spring Term – November 1

##### *International Applicants*

Fall Term – April 1

Spring Term – September 1

Please note that the Department does not normally admit students during the summer.

### **Minimum requirements for admission**

- A Bachelor of Arts or a Bachelor of Science degree obtained in an accredited university
- Minimum grade point average (GPA) of 3.0 in upper-division work, preferably in chemistry {should include two semesters each of organic and physical chemistry with appropriate laboratories}
- Combined general GRE score >300
- At least two strong letters of recommendation
- Meaningful statement of research interests and career goals (250-500 words)

- Payment of application fee
- TOEFL score (>550 paper/173 computer) when applicable

More details about the GRE and TOEFL may be found at <http://links.utsa.edu/graduate/FutureStudentsAcademicPrograms/testInformation.html>

Upon official admission by UTSA, the student will receive a formal letter of offer (see **MS#1** sample letter) from the Department of Chemistry.

The Department of Chemistry does not offer financial support to M.S. students. However, Teaching Assistantships (TAs) are normally available, and students are encouraged to apply for these positions as soon as they are admitted to the program (see **MS#2**).

### **Orientation**

The Departmental orientation for new M.S. students takes place in the middle of January or August. (Exact dates vary from year to year and will be provided by the Graduate Advisor of Record). Attendance is mandatory. Topics typically include a general description of the graduate program, courses taught in the respective semester, and a questions and answer session. Studies for the M.S. may begin in either the spring or fall semester each year.

### **Typical Timeline for the M.S. Degree**

The procedures and requirements leading to the M.S. degree in chemistry are listed below.

The following is a recommended time-line for new M.S. students. This time-line will vary depending on the attendance status of the M.S. student (full- or part-time) and whether the student opts for a Thesis or Non-Thesis option.

#### **Year 1, First semester**

- Begin coursework
- Assume Teaching Assistant duties (if applicable)

- Meet faculty and learn about their research interests
- Select research advisor (Supervising Professor) by the end of the semester
- Select Thesis Committee (two additional members of the graduate faculty) by the end of the semester
- Attend departmental seminars
- Remove any conditions on admittance to program, if applicable

**Year 1, Second semester**

- Continue coursework
- Continue Teaching Assistant duties (if applicable)
- Commence research (if applicable)
- Attend departmental seminars
- Remove any conditions on admittance to program, if applicable

**Year 1, summer semester**

- Continue coursework (if applicable)
- Continue Teaching Assistant duties (if applicable – limited TA positions are open to M.S. students during summer)
- Commence/continue research

**Year 2, First semester**

- Continue coursework (if applicable)
- Continue Teaching Assistant duties (if applicable)
- Continue research
- Attend departmental seminars

**Year 2, Second/third/summer semesters**

- Complete coursework
- Continue Teaching Assistant duties (if applicable)
- Defend research (written and oral formats)

- Attend departmental seminars

### **Program Administration**

The Dean of the Graduate School at The University of Texas at San Antonio has overall responsibility for the M.S. Program in Chemistry. All M.S. work is subject to approval by the Graduate Council and by the Deans. The graduate faculty in the Department of Chemistry, along with the M.S. and Ph.D. Programs Committee (MPPC), and Graduate Advisor of Record, are responsible for curriculum development and on-going review.

The M.S. Program is supervised by the M.S. and Ph.D. Programs Committee of the Department of Chemistry which is composed of members of the faculty, including the Graduate Advisor of Record. The M.S. and Ph.D. Programs Committee is responsible for establishing admission requirements, recommending admission of applicants, overseeing academic curricula, monitoring students' academic progress, and verifying to the Graduate Council that the student has fulfilled all requirements for the awarding of the degree.

The day-to-day administration of the M.S. program is the responsibility of the Graduate Advisor of Record (GAR). The GAR advises all M.S. graduate students, maintains records, and represents the program. Questions about degree requirements and academic policies should be directed to the GAR, who may consult with the MPPC.

## **Requirements and Regulations**

Students enrolled in the Department of Chemistry's M.S. Program are subject to all established requirements and regulations of the Graduate School of The University of Texas at San Antonio. Refer to the Program Overview section of this Handbook for advice on determining which regulations may apply to your particular circumstances.

Students are strongly encouraged to refer to the current UTSA Graduate Catalog for guidance. This catalog is available in the Department of Chemistry's office and also online at <http://www.utsa.edu/gcat/>.

### **Time Limits**

Students have six years from the term of original registration to complete their M.S. degree program under the catalog in effect at the time of their initial registration. Students are strongly encouraged to complete their M.S. requirements within two and a half years. Longer times may be required if coursework needs to be repeated. These time limits may be extended for a maximum of three years for students participating in military service.

### **Credit Hour Requirements**

Students in the Department of Chemistry's M.S. program must complete all of the required courses outlined in the section of this Handbook entitled "Coursework Requirements". Students must complete a Program of Study that includes a minimum of 33 semester credit hours of graduate coursework and achieve an overall grade point average (GPA) of at least 3.0.

### **Transfer of Credit**

With the approval of the Graduate School, graduate credit hours (with grades of B or higher) from other Universities may be accepted *in lieu* of required courses. In addition, certain required courses may be waived based on the student's previous graduate course work. These hours will be accepted in the form of credit for the course material rather than

by application of credit hours to the student's transcript. Students are responsible for requesting such waivers. This process involves the submission by the student to the GAR, a brief letter of petition, course description and a copy of the relevant syllabus for each course for which credit transfer is sought. Upon approval by the MPPC, a formal petition to the College of Sciences will be made by the GAR. Approval of the waiver by the College of Sciences will then lead to notification of the Graduate School for final ratification. Credit transfer courses are not included in the computation of a student's GPA. A sample of Transfer of Credit application form is found at the UTSA Graduate School Forms (<https://graduateschool.utsa.edu/faculty-staff/category/forms/>) is to be used when requesting more transfer of more than six hours as this needs to be approved by the Graduate Dean.

### **English Language Requirements**

Students are required to possess a competent command of written and spoken English. For international students this requirement is met by obtaining or exceeding TOEFL scores listed below.

The UTSA Graduate Catalog (2015-2017) states: "The English Language Assessment Procedure (ELAP) is a mandatory UTSA assessment for incoming international students. For a student who's Test of English as a Foreign Language (TOEFL) scores are between 500 and 600 (paper version), 661 and 100 (internet version) or 173 and 250 (computerized version). ELAP tests academic language skills in the areas of reading, writing, listening, and speaking. The test is administered during orientation week at no charge to the student. A registration hold is placed on students until the test is successfully completed.

Students who are required to take English for International Students (EIS) classes and do not register for them or drop them before they are successfully completed will be withdrawn from the University and will jeopardize their visa status. Once students successfully complete the EIS classes, the registration hold is removed from their record.

### **Registration**



The Office of the Registrar schedules and announces the timing of the registration process to all students, Departments, Departmental Chairpersons, and their assistants prior to the start of each Semester. Information regarding registration can be found in the ASAP section <https://asap.utsa.edu/> of the UTSA website <http://www.utsa.edu/>. For individual registration concerns, students should consult the Department of Chemistry's GAR.

A student must register each Semester and Summer Terms that s/he is enrolled in the M.S. program. This includes courses in Research, Thesis, and Graduate Seminars. No student can receive credit for a course for which s/he has not registered.

### **Full-Time Status**

The minimum full-time course load for a Semester is nine Semester credit hours and for the Summer Term, one credit hour. The maximum load is individually determined by the student's Faculty advisor and the M.S. and Ph.D. Programs Committee. If a student is employed as a Teaching Assistant or Research Assistant, the course load may be reduced accordingly. In order to qualify for a Teaching Assistant position, students must register for at least 6 credit hours.

### **Teaching/Research Assistantship Guidelines**

Students who receive funding through teaching assistantships or research assistantships also receive tuition and fees to cover the nine credit hours taken in the Fall Semester, nine credit hours taken in the Spring Semester and three credit hours in the Summer Terms. The only exception is for students who are in their final Semester prior to graduation, during which registration for the final dissertation course will be considered a full-time course load.

### **Grading System**

The following grading system is used for all coursework:

<b>Grade Symbol</b>	<b>Grade Points</b>	<b>Meaning of Grade Symbol</b>
A	4	Outstanding
B	3	Above average (average graduate work)
C	2	Average (below average graduate work)
D	1	Below average (failing graduate work)
F	0	Failure (failing graduate work)
CR	0	Credit – indicates successful credit by examination or through Faculty evaluation of class tests, assignments, <i>etc.</i>
NC	0	No Credit – indicates unsatisfactory progress

Credit hours are awarded only for the grades of A, B, C and CR. All A to F grades are included in the calculation of the GPA. CR/NC grades and their associated course credits do not contribute in any way to the GPA calculation. A grade of F in a course will automatically result in dismissal from the Ph.D. program. Note that in the calculation of GPA, only UTSA courses are included. Students must maintain a GPA of 3.0 or above throughout candidacy.

Other grades may be given that do not contribute to the calculation of the GPA. A grade of W means Withdrawal and indicates that the student was passing at the withdrawal or drop. A grade of IN means Incomplete and can be assigned according to university guidelines. A grade of NR means No Report and can only be assigned by the Registrar. A grade of RP means Research in Progress and is applicable to Doctoral Dissertation courses. When the dissertation is complete, the RP grades will be changed to letter grades up to the maximum number of semester credit hours approved for the specific degree.

### **Academic Standing**

A student's academic standing is defined as good standing, academic probation, or academic dismissal. Academic probation describes the standing of a student in one of the following categories:

1. A student who fails to achieve a GPA of 3.0 or higher in any term at UTSA, irrespective of level of courses taken.
2. A student who received a grade of "D" in any course in a term.
3. A student who does not meet all requirements for unconditional or regular admission and who, by special action, is admitted on academic probation.
4. A student who has been reinstated following academic dismissal.

Academic probation is cleared only when none of the above criteria apply and when the student achieves an overall GPA of 3.0 as a graduate student at UTSA. In order to graduate, all graduate students must have a grade point average of at least a 3.0 (on a 4.0 scale). Students on academic probation are encouraged to discuss their status with their academic advisors and/or GAR.

Academic dismissal occurs when a student at the graduate level:

1. Earns a grade point average of less than 2.0 in any term.
2. Earns a grade of "F" in any course.
3. Currently on academic probation and would again be placed on academic probation under the provisions set forth above. If, however, the student's UTSA grade point average for the term is at least 3.0, he or she will continue on academic probation.

### **Standards for Graduate Support**

Students are guaranteed support as Teaching Assistants (TA) and/or Research Assistants (RA), unless their academic standing falls into any of the categories below for two consecutive terms:

academic probation

not making adequate progress towards degree

not completing an average of 8 credits/long semester (16 credits/academic year)

not completing Qualifying Exam by end of 5<sup>th</sup> semester

not completing the Independent Research Proposal by the end of the 7<sup>th</sup> semester

Summer terms are not counted as semesters in the above requirements.

Students are not guaranteed financial support after their 5<sup>th</sup> year in the Ph. D. program.

### **Withdrawal**

Permission for withdrawal from the Ph.D. program and the Graduate School may be granted by the Dean of the Graduate School. A student who wishes to withdraw should complete and sign a Withdrawal form available from the Enrollment Services Center. Students who withdraw during a regular “drop period” will receive a grade of “W” in all classes. Students who withdraw after the regular drop date with a passing grade will receive a “W”, while those who are failing will receive an “F”. Students will then be subject to UTSA’s academic standing probation and dismissal regulations. Students who withdraw should refer to the regulations on refunds of tuition and fees, readmission policies, and requirements for maintaining registration.

### **Leave of Absence**

A leave of absence from the Ph.D. program for a maximum of one year may be granted by the Dean of the Graduate School, subject to prior approval by the Graduate Programs Committee. Such permission will be granted only for extenuating circumstances and will not be granted when degree progress is unsatisfactory or when a student is on academic probation. Students must apply for a leave of absence to the GAR in writing and include the reason(s) for the request and the expected time of absence. If the request for leave is approved, the student will be notified by letter from the Dean of the Graduate School and complete the Administrative Clearance Form provided by the Graduate School. The student should also drop all courses for which they are currently enrolled.

### **Non-registration**

A student who fails to register for one or more consecutive semesters and does not elect to apply for a leave of absence can be dismissed from the program. If dismissed, the student may re-apply for admission. Such an application will be subject to the same requirements, procedures, and acceptance considerations that apply to first-time applicants.

### **Transfer To Another Graduate Programs**

Any student who wishes to change the course of study from one graduate program to another must make written application to that program. Such an application will be subject to the same requirements, procedures, and acceptance considerations that apply to first-time applicants. Students who wish to apply for such a transfer must have an interview with the Dean of the Graduate School.

### **Graduation**

The degree of Doctor of Philosophy is awarded by the Board of Regents upon the satisfactory completion of a prescribed Program of Study as documented by the Graduate Programs Committee, recommendation of the Graduate School, and certification of the candidate by the Dean and President to the Board of Regents. Degrees are awarded at the end of each spring, summer and fall Semester. Commencement ceremonies are held in May and December, at the end of the spring and fall Semesters. Students who graduate at the end of the Summer Semester may participate in either the May or December ceremony. Information on the procedures to be followed is available in the Office of the Registrar or online at [www.utsa.edu/registrar](http://www.utsa.edu/registrar).

### **Misconduct**

Students are responsible for knowing and observing the University's "Procedures and Regulations Governing Student Conduct and Discipline" and the "Rules and Regulations of the Board of Regents of The University of Texas system". This and additional information can be found in the UTSA catalogs (<http://www.utsa.edu/gcat>) which are available on-line.

## Degree Requirements – Overview

The M.S. in Chemistry is awarded as a Thesis or Non-Thesis option. University-wide regulations for M.S. degrees are found at:

<http://www.utsa.edu/gcat/chapter5/chapter5.cfm>

## Thesis Option

Degree Requirements. The Master of Science program requires the successful completion of a minimum of 33 semester credit hours. Candidates must complete the following:

A. Required courses (27 semester credit hours):

[CHE 5263](#) Advanced Analytical Chemistry 3 hours

[CHE 5313](#) Advanced Biochemistry 3 hours

[CHE 5453](#) Advanced Inorganic Chemistry 3 hours

[CHE 5643](#) Advanced Organic Chemistry 3 hours

[CHE 5843](#) Advanced Physical Chemistry 3 hours

[CHE 5981](#) Graduate Seminar in Chemistry 3 hours

[CHE 6951-3](#) Directed Research 3 hours

[CHE 6983](#) Master's Thesis, including an oral defense of the written thesis 6 hours

Registration for [CHE 5981](#) is required for each semester of residence, although no more than 3 semester credit hours can be applied to the Master's degree.

B. A minimum of 6 semester credit hours of electives in chemistry, as approved by the Graduate Advisor of Record, is required.

C. Students must pass a final oral comprehensive examination, based on their research during Independent Study and Master's Thesis, which is normally scheduled during the student's last semester of work, for completion of the degree program. Please note the following "students must be enrolled in CHE 6961 Comprehensive Examination in the semester the comprehensive exam is taken, if registered for no other courses that semester."

D. Students must successfully defend their thesis research results before their Graduate Committee prior to the submission of the thesis to the Dean of the Graduate School for approval.

E. **Note:** Students must enroll in CHE 6961 Comprehensive Examination in the semester the comprehensive examination is taken, if registered for no other courses that semester.

### **Non-Thesis Option**

Degree Requirements. This program requires the successful completion of a minimum of 33 semester credit hours. Candidates for the degree must complete the following:

A. Required courses (27 semester credit hours):

[CHE 5263](#) Advanced Analytical Chemistry 3 hours

[CHE 5313](#) Advanced Biochemistry 3 hours

[CHE 5453](#) Advanced Inorganic Chemistry 3 hours

[CHE 5643](#) Advanced Organic Chemistry 3 hours

[CHE 5843](#) Advanced Physical Chemistry 3 hours

[CHE 5981](#) Graduate Seminar in Chemistry 3 hours

[CHE 6991-3](#) Master Thesis 6 hours

Registration for [CHE 5981](#) is required for each semester of residence, although no more than 3 semester credit hours can be applied to the degree. The laboratory work in is taken as Independent Study and Directed Research, with Independent Study preceding Directed Research.

B. 6 semester credit hours of elective organized course support work within the College of Sciences or College of Engineering, as approved by the Graduate Advisor of Record.

C. Students must pass a final oral comprehensive examination, scheduled during the student's last semester of work, for completion of the degree program. Please note the following "students must be enrolled in 6961 Comprehensive Examination in the semester the comprehensive exam is taken, if registered for no other courses that semester."

The course numbers serve as links to course descriptions in the Graduate Catalog web site.

*The following requirements apply to both degree options except where explicitly stated otherwise.*

### **Choose Supervising Professor/Generate Preliminary Results**

By the end of the first semester of Year 1, the student should choose a Supervising Professor, who must be a member of the graduate faculty, and start to develop knowledge of the supervising professor's research. Descriptions of faculty research interests can be found online. Students should meet with faculty before selecting an advisor.

For the Thesis Option, starting the second semester and/or first summer session of Year 1, the student should begin research in the supervising professor's laboratory. It is critical that the student develops sufficient laboratory skills to generate preliminary results so as to complete the degree requirements in a timely fashion. The preliminary results should be of sufficient rigor and merit to justify continued investigation, and serve as the basis for the proposed project.

### **Thesis/Supervising Committee**

The Thesis Committee (Thesis option) or Supervising Committee (Non-thesis Option) should be chosen no later than the end of the first semester of study. The Supervising Professor chairs the Committee. Additional members of the Thesis/Supervising Committee are chosen by the supervising professor in consultation with the student. The Thesis/Supervising Committee must consist of at least three members, including the Supervising Professor. If justified, one or more members of the Thesis/Supervising Committee can be external to the Department of Chemistry; the GAR should be consulted in this case, because a special application must be made to the Graduate School. See form MS#6 for requesting approval of the Thesis/Supervising Committee. This task must be completed before the end of the first semester of registration.



**Program of Study**

The Program of Study (POS) consists of the courses taken towards the degree (See **Course Requirements**) and must be approved by the student's Supervising Professor, Thesis Committee, and MS and PhD Programs Committee.

The student's performance on both the oral and written portions of their research shall be evaluated by the Thesis Committee, which shall recommend either passage or changes in order to remedy deficiencies in the oral and/or written portions. Deficiencies must be remedied within two months of the Thesis Committee's recommended changes via another oral presentation (PowerPoint slides should be numbered) before the Thesis Committee and/or presenting hard copies of a suitably amended thesis (Thesis option)/research report (non-Thesis option) to the Thesis Committee.

**Written Thesis (Applies to Thesis Option only)**

The student shall write a draft of the Thesis and submit it for review to the Supervising Professor. After appropriate editing, hard copies of the draft shall be submitted to all members of the Thesis Committee for further review. Requirements for the format and style of the written thesis are available at <http://www.utsa.edu/gcat/chapter5/MastersDegReg.cfm#thesis>. Scientific terminology is determined by the supervising professor in consultation with the student, but should be clear, concise and consistent throughout. Following the final oral examination (PowerPoint slides should be numbered), the Thesis Committee makes recommendations for changes to and must approve the final version of the written thesis.

**Final Oral Examination (Applies to Thesis Option only)**

The final oral examination shall be held no sooner than one week and no later than one month following submission of the written draft to the Thesis Committee. The final oral examination consists of a public oral presentation (PowerPoint slides should be numbered) of the written thesis and a closed oral defense. The defense is administered and evaluated by the student's Thesis Committee and covers the thesis as well as the general field encompassing the thesis.

**Written Report (Applies to Non-Thesis Option only)**

The Written Report should present a relatively limited (compared to a thesis) set of original experimental data with some brief background and analysis of the data. Within these guidelines the Supervising Committee in consultation with the student shall agree on the level and extent of the research and the evaluation criteria for the Written Report. This agreement shall be provided to the student in writing either during the first year of study or upon transfer from the Thesis to the Non-Thesis option.

The Written Report must be typed double-spaced and consist at minimum of the following sections: Introduction, Experimental Procedures, Results and Discussion (including figures and tables) and References (numerically listed in order of citation in the text). Scientific terminology is determined by the Supervising Professor in consultation with the student, but should be clear and consistent throughout. The student shall write a draft of the Report and submit it for review to the Supervising Professor. After appropriate editing, hard copies of the draft shall be submitted to all members of the Supervising Committee. Following the final oral examination, the Supervising Committee shall make recommendations for changes to and must approve the final version of the Written Report.

**Final Oral Examination (Applies to Non-Thesis Option only)**

The final oral comprehensive examination shall be held no sooner than one week and no later than one month following submission of the draft of the Written Report to the Supervising Committee. The examination consists of a public oral presentation of the Written Report and a closed oral defense. The defense is administered and evaluated by the student's Supervising Committee and covers the Written Report as well as the general field encompassing the Report.