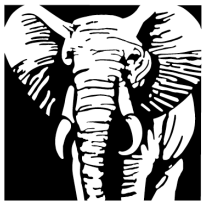

CAL STATE FULLERTON

GRADUATE HANDBOOK

FOR THE

MASTER OF SCIENCE DEGREE

IN CHEMISTRY

Department of Chemistry and Biochemistry

California State University, Fullerton

TABLE OF CONTENTS

I. MASTER OF SCIENCE IN CHEMISTRY - DEGREE PROGRAM

The Master of Science (MS) degree in chemistry is designed to qualify students for advanced work in chemistry and biochemistry. The MS degree will lead to positions in industrial, government, or academic laboratories, preparation for entry into and completion of a chemistry or biochemistry Ph.D. degree, or effective chemistry teaching in high schools and community colleges.

The program provides fundamental courses at a level and depth commensurate with those taken during the first year of a doctoral program. It additionally provides training in modern chemical or biochemical research and research methods. Six concentrations in the degree are available: analytical, biochemistry, chemical education, inorganic, organic, and physical.

The program has been designed to allow completion of the degree coursework in two years, including summers (see timeline below). However, part-time participation or the need to take refresher courses will extend that time. Completing the MS thesis/project research project can extend beyond two years based on student effort and degree of research success; MS students are encouraged to regularly consult with their research advisor about their progress in research.

The formal steps in obtaining the MS in Chemistry are:

A. Admission (granted for either Fall or Spring)
B. Classification (completion of any pre-classification requirements)
C. Advancement to candidacy (after a request is filed for graduation)
D. Graduation (completion of requirements and awarding of degree).

Requirements and procedures for admission to the graduate programs at CSUF are given in the University Catalog. Additional steps and requirements for admission to the graduate program in this department are described on the department website.

The MS program requires 30 units of coursework to complete the MS in Chemistry. These are divided into core and elective classes as well as research and thesis/project courses. More details about this coursework are given below.

II. ADVISEMENT

Graduate students will meet with the graduate program advisor each semester while completing their 30 units of coursework. The graduate program advisor's role is to provide guidance on completing the coursework, along with, as needed, general mentorship.

Once a student joins a research group, they should also obtain advisement from their research advisor. The research advisor should be an MS student's primary research mentor and provide discipline-specific guidance regarding career goals.

III. PRE-CLASSIFICATION REQUIREMENTS

A student's foundational knowledge of chemistry or biochemistry is essential for completing the MS program. A new graduate student must demonstrate their mastery of chemistry or biochemistry at the undergraduate level. Completing all upper-division undergraduate chemistry or biochemistry major courses with an average GPA of 3.0 or higher and earning an average grade of B or better in courses related to their graduate field of study will demonstrate mastery of chemistry or biochemistry fundamentals.

Students who have not earned an average GPA of 3.0 or higher in all upper-division undergraduate chemistry or biochemistry major courses and/or have not earned an average grade of B or better in courses related to their graduate field of study will establish their mastery by completing one of the following:

1) Passing one placement exam in their intended area of graduate study (analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, or physical chemistry) before starting their 1st semester in the graduate program. Scoring at the 40th percentile or higher on the exam is considered passing.

2) Taking an undergraduate course during their 1st semester in the program and earning a grade of B or better. The Graduate Program Advisor will determine the specific course required based on the student's intended area of graduate study.

Students who do not meet either of these requirements at the end of their 1st semester in the program will be removed from the graduate program.

IV. SELECTION OF A RESEARCH ADVISOR

A graduate student should select a research advisor during their 1st semester in the program. Graduate students typically meet with several faculty members to discuss their research and expectations for graduate students. Students are encouraged to begin meeting with faculty after receiving admission into the program.

Once a student joins a research group, the faculty research advisor and the student will work together to fill out the Department of Chemistry and Biochemistry Graduate Mentor-Mentee Agreement. A copy of this agreement is appended to this handbook. In doing so, it is important that both parties clearly communicate their expectations for each other. The faculty advisor and student should keep copies of the signed Mentor-Mentee Agreement. A copy of the agreement shall also be given to the graduate program advisor. If a student's faculty research advisor is also the graduate program advisor, then a copy of the Mentor-Mentee Agreement will be given to the department chair.

Both the faculty research advisor and the student have the option to request a revision to their Mentor-Mentee Agreement. In this case, both parties need to discuss their expectations for each other, sign a revised copy of the agreement, and send a revised copy to the graduate program advisor or department chair.

We hope that every mentor-mentee relationship is successful! The Department of Chemistry and Biochemistry Graduate Mentor-Mentee Agreement describes the procedure that will be followed if either party feels that the other is not meeting their expectations.

V. COURSEWORK

The degree program consists of 30 units of coursework approved by the faculty research advisor and the graduate program advisor. Generally, at least 27 of these units are 500-level. With the approval of the faculty research advisor and graduate program advisor, an MS student may take up to 6 units of 400-level coursework. Courses below 400-level, courses taken to demonstrate competency, CHEM 423A, CHEM 423B, and CHEM 422 do not count towards the MS degree.

An overview of the 30 units of coursework, along with a suggested plan for completing it, is given below. The faculty research advisor has final approval on graduate student enrollment in the research courses Chem 597/598 and Chem 599.

Course	Units
Chem 500 (Introduction to Graduate Studies)	1
Chem 505A (Seminar: Research Background, Methods, and Objectives)	1
Chem 505A (Seminar: Research Background, Methods, and Objectives) OR Chem 560 (Teaching Effectiveness in Chemistry Labs)	1
Chem 505B (Seminar: Research Results and Discussion)	1
Chem 505C (Seminar: Telling a Complete Research Story)	2
Chem 599 (Independent Graduate Research)	6
Chem 597 (Project) OR Chem 598 (Thesis)	6
Chem 5## (Concentration Coursework)	6
Chem 5## or Chem 4## (Concentration Coursework)	3
Chem 5## or Chem 4## (Elective Coursework)	3
Total Units	30

Year 1		Year 2		Already Completed 30 Units
Fall	**Spring**	**Fall**	**Spring**	Students that have earned 30 graduate units, but have **not** completed their thesis will enroll in GRAD700 ($400)
Chem500(1)	Chem505A(1) OR Chem560(1)	Chem505B(1)	Chem505C(2)	
Chem505A(1)	Chem5##(3)	Chem5##(3)	Chem599(2)	
Chem5##(3)	Chem599(2)	Chem599(1)	Chem597(2) OR Chem598(2)	
Chem599(1)		Chem597(4) OR Chem598(4)		
		Chem4##(3)		
6 UNITS	6 UNITS	12 UNITS	6 UNITS	
Graduate tuition and fees for California residents: 0-6 units: $2,902.81 or 7 or more units: $4,498.81				

GRAD 700 allows students to remain enrolled at a reduced tuition (approximately $400). GRAD 700 students may be hired as teaching and/or research assistants. GRAD 700 students may pay additional fees to obtain access to CSUF healthcare (including counseling and psychological services) and CSUF recreation facilities; these services are not included in the reduced tuition.

For international students, some visas require that the student enrolls full-time at 9 units/semester. A student can be considered full-time at 6 units/semester if they are employed as a teaching assistant or graduate assistant. The student must complete a form requesting a reduced course load from the International Studies Office.

Six of the thirty units are core courses that all graduate students in the program take. **Chem 500 (Introduction to Graduate Studies)** is a 1-unit course taught in the fall that introduces students to the MS Chemistry program and the resources available at CSUF. The 1-unit seminar courses **Chem 505A (Seminar: Research Background, Methods, and Objectives)** and **Chem 505B (Seminar: Research Results and Discussion)** are taught each semester. These two courses provide graduate students with practical skills on delivering an oral presentation by focusing on organizing, evaluating, and presenting scientific information professionally. They culminate in the 2-unit course **Chem 505B (Seminar: Telling a Complete Research Story)** in which each student presents a departmental seminar consisting of a 40-minute presentation with 10 minutes for questions. All graduate students

will take 1 unit of **Chem 505A**, 1 unit of **Chem 505B**, and 2 units of **Chem 505C**. Graduate students can take a second unit of **Chem 505A** or 1 unit of **Chem 560 (Teaching Effectiveness in Chemistry Labs)**. **Chem 560** is taught each fall and introduces effective teaching strategies. **Chem 560** is especially recommended for graduate students who are serving or plan to serve as departmental teaching assistants.

Each student must take six units of 500-level coursework and an additional three units of 400-level or 500-level coursework in their concentration. The following are suggested core courses for each concentration. An alternative set of courses can be developed to meet an individual student's needs. This requires the approval of both the faculty research advisor and the graduate program advisor.

Analytical:
- Chem 511 - Advanced Analytical Chemistry
- Chem 512 - Advanced Instrumentation
- Chem 552 - Kinetics and Spectroscopy

Biochemistry (at least 3 of the following)
- Chem 541 - Protein Biochemistry
- Chem 542 - Nucleic Acid Chemistry
- Chem 543 - Physical Biochemistry
- Chem 546 - Metabolism and Catalysis

Inorganic (at least 3 of the following)
- Chem 480T – Materials Chemistry
- Chem 425 - Advanced Inorganic Chemistry
- Chem 551 - Quantum Chemistry
- Chem 552 - Kinetics and Spectroscopy

Organic
- Chem 531 - Organic Reaction and Mechanisms
- Chem 535 - Organic Synthesis
- Chem 537 - Organic Spectroscopy

Physical
- Chem 512 - Advanced Instrumentation
- Chem 551 - Quantum Chemistry
- Chem 552 - Kinetics and Spectroscopy

Chemical education graduate students are encouraged to consult with their faculty research advisor and graduate program advisor to develop a series of appropriate courses to take. Such courses may include Chem 562 (Review of Research Methods in Discipline-Based Science Education). Chemical education students should take Chem 560 instead of one unit of Chem 505A.

In addition to the minimum nine units of concentration courses, each student must take an additional three units of 400- or 500-level coursework. In some cases, courses from other departments are appropriate and can be approved by the graduate program advisor.

Unless special permission is granted by the graduate program advisor, only three units of Chem 580T or Chem 480T (Special Topics courses) may be credited towards fulfillment of the course requirement.

It is important to note that, per UPS-411.100, any 400-level course taken to fulfill the MS degree must require graduate students to complete additional work above and beyond that required of undergraduate students.
The remaining 12 units are associated with the MS research project: **Chem 599 (Independent Graduate Research)** and **Chem 597 (Project)** or **Chem 598 (Thesis)**. These should be scheduled based on the schedule given above, with input from the research advisor. The research advisor has the final say on when these courses will be taken.
Up to nine units of courses taken during a student's undergraduate studies can count towards the MS degree, provided each course satisfies the following criteria:

a) Coursework applied to the MS degree cannot have been used to fulfill any baccalaureate degree requirements (including major, minor, or concentration).
b) The coursework must have been completed at an accredited college or university.
c) Coursework applied to the MS degree must have been taken within five years of entering the Master's program.
d) The student must have earned a grade of "B" or better in any coursework taken as an undergraduate that will be applied to the MS degree.
e) The student must provide evidence that the course is comparable to a 400- or 500-level course at CSUF (excluding the undergraduate biochemistry courses Chem 421, Chem 423A, Chem 423B, and Chem 422).

A student wishing to transfer undergraduate coursework to the MS degree must consult with the graduate program advisor about the suitability of the potential transfer courses. The graduate program advisor has the final authority to decide whether an undergraduate course is suitable for transfer into the MS degree. If the graduate program advisor approves the transfer, the student must submit a petition form; this form is available on the Registration and Records website.

Graduate students must complete all 500 and 400-level courses, excluding Chem 598 and Chem 599, with a cumulative grade point average of B or better. Additionally, only grades of C or better are acceptable for the 30 units that count towards the MS degree. If a student earns a grade of C- or lower in a course, then the student must either retake the course or take an additional 400- or 500-level course.

A graduate student is placed on academic probation if the MS grade point average (excluding Chem 598 and Chem 599) falls below 3.0. Graduate students will be allowed two semesters on academic probation before being subject to disqualification. A student placed on academic probation will receive a letter from the Graduate Studies office detailing what needs to be done to maintain their graduate student status. The Graduate Studies Office maintains a list of students on probation and subject to disqualification (see the University Catalog for more details).

VI. M.S. CHEMISTRY THESIS

A. Introduction

A *thesis* is defined as the written product of a systematic study of a significant problem. It identifies the problem, states the major assumptions, explains the significance of the undertaking, sets forth the sources for and methods of gathering information, analyzes the data, and offers a conclusion or recommendation. The department requires, therefore, that the thesis be an original contribution in chemistry or biochemistry and contain material that could merit publication in the scientific literature.

B. Thesis Committee

A thesis is defended to and approved by the thesis committee. University policy states that this committee should include not fewer than three faculty members, one of whom is the student's research advisor, plus two other faculty members, at least one of whom is from the department. Under certain circumstances, this committee may include more than three faculty members. The committee is chosen by the student in consultation with the research advisor and must be approved by the graduate program advisor.

The graduate student should establish their thesis committee at least 1 year before the semester in which they intend to defend.

C. Preparation and Approval

The thesis should be completed in close cooperation with the research advisor. In addition, the thesis must be approved by the graduate student's thesis committee.

The Graduate Studies Office sets the general style for theses. A research thesis will go more smoothly if the writing is started while the research is in progress. A template and guidelines for writing and submitting a thesis are available from the Graduate office website: https://www.fullerton.edu/graduate/current/thesis.html
It is not the responsibility of the Graduate Studies Office to proofread a thesis. Proofreading is primarily the responsibility of the graduate student and the research advisor. The thesis should be free of known errors when submitted to the Graduate Office.

D. Content

The research thesis describes original work carried out by the student under the supervision of the research advisor. The research advisor should be consulted frequently during the preparation to avoid extensive rewriting later. The graduate student will complete six units of Chem 599 and six units of Chem 598 as they complete their research and write a thesis.

The MS thesis generally consists of:

a) **Introduction Chapter**: The introduction chapter should provide background to the thesis research based on an exhaustive literature search. The introduction to the thesis should generally be more comprehensive than the standard introduction section of a research paper.

b) **Methods Chapter**: The methods chapter should describe the experimental or computational methods used to conduct the thesis research. The methods chapter should be more exhaustive than what is included in a research paper. As appropriate for their field, the faculty research advisor may require the MS student to describe how the methods work and why they are appropriate for the research project. Safety procedures should be described if a method used in the thesis has special hazards.
c) **Research Chapter(s)**: The research chapter(s) describe the results obtained by the MS student and discuss their scientific meaning and implications. It is expected that the MS student made a significant contribution to the research included in the thesis.
d) **Conclusion Chapter**: The conclusion chapter provides a concise summary of the results presented in the thesis and potential future work.

If the MS student is a co-author and provided significant work on a published or accepted, peer-reviewed research paper, then this paper can be added to the thesis as one of the research chapters. Any supporting information for the paper must be either added to the research chapter or included as an appendix. Generally, the text of a peer-reviewed research paper can be added to the thesis without significant revisions. However, the following revisions may be required:

a) The faculty research advisor may require revisions to the published research paper if the student is not a primary author. In determining the scope of these revisions, the faculty research advisor will consider factors such as the degree to which the student contributed to the published research paper and the impact of this research chapter on the thesis as a whole.
b) The faculty research advisor may require the incorporation of additional information in the thesis that was not included in the published or accepted research paper.
c) The faculty research advisor and/or thesis committee may require edits to the introduction and conclusion sections of the published or accepted paper to reduce redundancy and improve cohesion with the rest of the thesis.

If applicable, the student must obtain copyright permission from the journal(s).

E. Timeline for Preparing for Thesis Defense

This timeline is based on the thesis submission deadline for the semester in which the graduate student plans to submit their thesis. The timeline represents the deadlines by which each activity must be completed. The student and their research advisor can choose to accomplish these objectives earlier. Students who fail to meet one or more of these deadlines may have to postpone their defense to one semester later than their original plan. If a thesis defense is postponed (either electively or based on failing to meet deadlines), then any completed items in the timeline do not need to be redone.

1 Year Before Thesis Submission Target: The graduate student must form a thesis committee that is approved by the graduate program advisor and research advisor. All members of the committee must have agreed to serve on the committee.

6 Months Before Thesis Submission Target: The graduate student will email an outline of their introduction, methods, and research chapters to their thesis committee. The research advisor must approve the outline, and it must be sufficiently detailed to allow the thesis

committee members to recognize the structure and big-picture content of the thesis. The research chapter(s) outline should include any planned work that has not yet been accomplished.

The thesis committee members are encouraged to meet briefly with the student to discuss the outline. The purpose of these meetings is to initiate conversation between the graduate student and the thesis committee members, as well as encourage the MS student to begin thinking about their thesis well before the defense. At these informal meetings, the committee members will provide big-picture suggestions for the thesis. The thesis committee members are not expected to provide detailed feedback on any aspects of the thesis at this stage. If a committee member feels that the outline is acceptable and has no significant feedback to provide, they can email the student instead of meeting.

2 Weeks Before Thesis Defense: The graduate student must distribute a complete thesis draft to the committee. This complete draft shall be fully approved by the research advisor and free of known errors.

Thesis Defense: It is advised to schedule the thesis defense at least two weeks before the thesis submission deadline to ensure sufficient time to complete all required edits by the deadline. The thesis submission deadlines can be found here: http://www.fullerton.edu/graduate/academics/thesis.php

F. Oral Defense of Thesis

A thesis must be defended before the thesis committee (Section V). The student shall submit the thesis to the committee members at least two weeks before the scheduled date of the thesis defense. By submitting the thesis to the committee members, the faculty advisor guarantees that the thesis is ready to be defended and printed. The defense shall take part according to University and Departmental guidelines:

- An oral defense typically includes a presentation by the Master's candidate to the public and the student's thesis committee. The presentation will be composed of the student's major research accomplishments and results, with a discussion about what the results mean. After the public presentation, the graduate student and thesis committee will have a private meeting to discuss the thesis presentation and ask questions to gauge the student's understanding of their research.

- The defense will be held in an appropriate academic environment, generally on campus. Program faculty may approve oral defenses undertaken partly or wholly in mediated environments, including via conference call or online, provided the defense takes place in "real-time."

- The oral defense, usually a graded pass/fail event, is documented by the student and thesis committee completing the thesis verification form. Members may, however, withhold their approval until necessary changes are made to the thesis.

VII. M.S. CHEMISTRY PROJECT

The research advisor and graduate student can jointly decide to complete the M.S. Chemistry degree by completing and defending an M.S. Chemistry project.

A. Definition of the M.S. Chemistry Project

An M.S. Chemistry project is defined as a submitted manuscript for peer-reviewed publication in which the graduate student plays a major role in both the research and the writing. A graduate student's contributions to the manuscript should amount to at least 50% of the work, both in the research and in the writing. A manuscript must meet the following criteria to be considered a M.S. Chemistry project:

1) The amount of research performed by the graduate student must be comparable to what is generally expected in an M.S. Chemistry thesis in the research advisor's group.
2) The graduate student must take the lead in writing a significant portion of the paper. In particular, the graduate student must write the complete first draft of their research group's component of the paper. This includes their group's contribution to the introduction, methods, results, and conclusions sections as well as all associated figures, graphs, tables, and references. The graduate student must actively participate in all manuscript revisions under their research advisor's guidance.
3) When the M.S. Chemistry project is approved, the manuscript must be submitted to a professional, peer-reviewed scientific journal. This peer-reviewed journal shall be appropriate to the graduate student's field of chemistry.

In addition to the manuscript, an M.S. Chemistry project consists of an additional written document that consists of either:

1) A more comprehensive discussion of the background and context of the research described in the manuscript.
2) A more comprehensive discussion of the methodology used in the project. This should include a pedagogical description of how the method(s) work.

This additional document, in conjunction with the corresponding section of the manuscript, should generally be comparable to what is expected in the corresponding chapter of an M.S. Chemistry thesis. The research advisor and project committee can together agree to waive the requirement of this additional document if they collectively believe that the introduction and/or methods section of the manuscript is sufficiently comprehensive in scope and has been written by the student.

If a graduate student contributes to a publication that does not meet one or more of the above criteria, then the graduate student should complete their degree through the M.S. Chemistry thesis.

For non-collaborative projects, the research advisor has the authority to decide whether or not a manuscript satisfies the criteria for an M.S. Chemistry project. If a project committee member has concerns about whether or not one of these criteria has been met, they shall

discuss their concerns with the research advisor and other committee members. The research advisor and project committee should arrive at a consensus decision and then communicate this to the graduate student.

For collaborative projects, the research advisor and project committee shall decide jointly whether or not the graduate student's contributions to the publication, in terms of both research and writing, are sufficient for the publication to be considered a M.S. Chemistry project. The graduate student is encouraged to initiate these discussions well in advance of their planned defense.

B. Project Committee

The M.S. Chemistry project is defended to the project committee. University policy states that this committee should include not fewer than three CSUF faculty members, one of whom is the student's research advisor, plus two other faculty members, at least one of whom is from the department. Under certain circumstances, this committee may include more than three faculty members. For example, an external collaborator may serve on the committee as a fourth member. The committee is chosen by the student in consultation with the research advisor and must be approved by the graduate program advisor.

The graduate student should establish their project committee at least 1 year before the semester in which they intend to defend.

C. M.S. Chemistry Coursework

A student working on an M.S. Chemistry project should enroll in Chem 597 (Project) instead of Chem 598 (Thesis).

Before the semester of graduation, the graduate student shall receive a grade of RP (Report in Progress) for Chem 597. Once the student has successfully defended their project and it has been fully approved, the research advisor shall convert the RP grades into the earned letter grades. See Section F for details about how a student can transition from a project to a thesis or vice versa.

D. Timeline for Preparing for Project Defense

This timeline is based on the grade submission deadline for the semester in which the graduate student plans to submit their project. The timeline represents the deadlines by which each activity must be completed. The student and their research advisor can choose to accomplish these objectives earlier. The research advisor may also impose additional informal deadlines. Students who fail to meet one or more deadlines may have to postpone their defense to one semester later than their original plan. If a project defense is postponed (either electively or based on failing to meet deadlines), then any completed items in the timeline do not need to be redone.

1 Year Before Project Defense Target: The graduate student must form a project committee. The graduate program advisor and research advisor approve this committee. All members of the committee must agree to serve on the committee.

6 Months Before Project Defense Target: The graduate student will email an outline of their project to their project committee. The research advisor must approve the outline. The outline must be sufficiently detailed to allow the project committee members to recognize the structure and big-picture content of the project. In the case of a collaborative project, the graduate student shall inform the committee about the nature of the collaboration and their contributions to both the research and writing.

Project committee members are expected to provide written feedback to the graduate student. Note that project committee members are not expected to provide detailed feedback at this stage; the feedback can be limited to big-picture suggestions. If a project committee member has significant feedback to provide, they are encouraged to meet briefly with the student to discuss the outline. The purpose of these meetings is to initiate conversations between the graduate student and the project committee members, as well as encourage the M.S. student to begin thinking about their project well before the defense.

If a project committee member has serious concerns about the project outline, they are encouraged to meet with the research advisor prior to sharing their concerns with the student. This is to provide the project committee members and research advisor the opportunity to discuss the concerns and arrive at a consensus set of suggestions to give to the student.

A Minimum of 2 Weeks Before Project Defense: The graduate student must distribute a complete project draft to the committee. This complete draft of the publication-quality manuscript shall be fully approved by the research advisor. The research advisor has the authority to decide whether the manuscript must be submitted to a peer-reviewed journal before the defense.

Instead of waiting until 2 weeks before the project defense, the graduate student and research advisor may decide to solicit feedback on the manuscript from the project committee before submitting it for publication. The manuscript sent to the project committee must be complete and fully approved by the research advisor. The graduate student must provide the committee members with a clear timeframe for providing feedback. The project committee members must be given at least two weeks to provide their feedback.

Project Defense: It is advisable to schedule the project defense no later than two weeks before final examination week to ensure sufficient time to complete any required edits by the deadline for submitting grades.

Revisions to Project: The project committee should generally provide feedback on the manuscript and the additional document on the background or methods. If a project committee member has serious concerns about the project, they are encouraged to meet with the research advisor prior to sharing their concerns with the student.

The graduate student and research advisor are encouraged to seriously consider feedback from the project committee members and, when appropriate, revise the text of the manuscript accordingly. The research advisor has the final say on what edits are necessary for the manuscript to be approved. The graduate student and research advisor should generally follow all recommendations from the project committee about the additional document on the background or methods.

Approval of Project: The M.S. Chemistry project is considered approved when both of the following have been met:

1) The manuscript has been submitted for publication in a peer-reviewed scientific journal.
2) The graduate student has made all edits to the manuscript required by the research advisor and, when appropriate, all edits to the additional written document on the background or methods required by the project committee.

E. M.S. Chemistry Project Defense

The oral defense of the M.S. Chemistry project involves a presentation by the Master's candidate to the public and the student's project committee. The presentation will focus on the student's major research accomplishments and results, with a discussion about what the results mean. The student should also provide an overview of the background of the project and the methods employed.

After the public presentation, the graduate student and project committee will have a private meeting to discuss the project presentation and ask questions to gauge the student's understanding of their research.

The defense will be held in an appropriate academic environment, generally on campus. Program faculty may approve oral defenses undertaken partly or wholly in mediated environments, including via video conference call, provided the defense takes place in "real-time."

The oral defense is a graded pass/fail event and is documented by the student and the project committee completing the project defense verification form. A copy of this signed form shall be sent to the graduate student, the research advisor, and the graduate program advisor.

F. Transitioning Between M.S. Chemistry Project and M.S. Chemistry Thesis

If the graduate student and research advisor decide their manuscript will not meet one or more criteria for the M.S. Chemistry project, then the graduate student can complete their degree via the M.S. Chemistry thesis. If this occurs, notify the graduate program advisor; they will help the graduate student to convert the Chem 597 (Project) units into Chem 598 (Thesis) units. Similarly, it is possible to transition from the M.S. Chemistry thesis track to the M.S. Chemistry project track. In all cases, it is important that the graduate student receives a grade of RP for all Chem 597 or Chem 598 units while still in the program.

VIII. ADVANCEMENT TO CANDIDACY AND GRADUATION

A. Advancement to Candidacy

Advancement to candidacy is achieved upon completion of a successful graduation check. The student must apply for a graduate check and pay the graduation fee before the final graduation term.

B. Graduation

To be eligible for graduation, a student must:

1) Apply for graduation through their student portal.

2) Conform to and complete all department and university regulations regarding graduation, which include:

- Completion of all graduate coursework with a grade point average of 3.0 or better in all courses, excluding Chem 597/598 and 599. Additionally, a grade of C or better must be earned on each course that contributes to the 30 units of the MS degree.

- Presentation of a departmental seminar (completion of Chem505C).

- Completion and oral defense of the M.S. Chemistry thesis or M.S. Chemistry project and its approval by the thesis/project committee and the Graduate Studies Office.

3. The procedure for final approval of the thesis is described on the CSUF graduate studies website http://www.fullerton.edu/graduate/current_students/thesis.php.

IX. GRADUATE STUDENT ASSISTANTSHIPS

The department may hire graduate students to serve as graduate and teaching assistants. Hiring depends on departmental needs and student qualifications. Renewal of a teaching assistantship requires satisfactory fulfillment of teaching responsibilities, which may include the results of the required student opinion questionnaire administered in each class each semester, class observations, and input from lecture instructors and laboratory coordinators.

X. CONTINUOUS ENROLLMENT

A graduate student must maintain continuous enrollment during regular semesters until award of the degree. This policy is designed to eliminate the need for re-admission to the university, to provide the opportunity for continuous use of facilities, including the library, and to assure the development of an integrated program, adequately supervised and effectively terminated within the time limitations allowed by regulations. Once a student has completed the required 30 units for the degree, the student may register for Graduate Studies

700 (GRAD700). Generally, students should only enroll in GRAD700 for up to two semesters.

A student may apply for a leave of absence for up to one year. The following are situations for which a leave of absence could be requested:

a) Illness, disability, or similar personal exigencies (including pregnancy)
b) Activities that enhance a student's professional career objectives
c) Active duty in the armed forces of the United States
d) Severe financial hardship

A student interested in applying for a leave of absence should discuss their options with the graduate program advisor.

Unless granted an approved leave of absence, a graduate student who fails to register each semester will be discontinued from the graduate degree program. If the student wishes to resume studies, it will be necessary to reapply for admission to the university and to the degree program and meet any changes or additional requirements approved in the interim. A leave of absence will only be considered for the circumstances described in the University Catalog.

XI. TIME LIMIT FOR COMPLETION OF THE MASTER'S DEGREE

All requirements for the Master's degree, including all coursework and defense of the thesis, must be completed within five years, beginning the first semester of graduate status. See the University Catalog for further information on this subject.