

Department of Chemistry & Chemical Biology

Graduate Handbook

The University of New Mexico

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The following is a detailed description of the requirements for advanced degrees in the Department of Chemistry & Chemical Biology at the University of New Mexico. University requirements may be found in the current Graduate School Bulletin. Below is an outline of degree requirements and the order in which students making normal progress are expected to complete them. Immediately following is a more detailed description of particular items in the list of requirements. Students are responsible for knowing and understanding these requirements. They must make sure they are making satisfactory progress toward fulfilling them. If you have any questions please contact either the Graduate Coordinator or Chair of the Graduate Studies Committee.

I. Outline of Degree Requirements

A. Master of Science Degree

1. Plan I (Thesis)

Year I:

Course work (approximately 3-three credit hour courses per semester)
Selection of Research Director and initiation of research project
Selection of Committee on Studies
Cumulative examinations

Subsequent Year(s):

Course work completion
Completion of cumulative examinations
Completion of research
Preparation and submission of Thesis
Research seminar
Oral defense of Thesis

2. Plan II (Course Work)

Year I:

Course work (approximately 3-three credit hour courses per semester)
Selection of a Research Advisor
Selection of Committee on Studies

Subsequent Years:

Course work completion
Research proposal, paper or educational aid

B. Doctor of Philosophy Degree

Year I:

Course work (approximately 3-three credit hour courses per semester)
Selection of Research Director and Dissertation project
Selection of Research Proposal Committee/Committee on Studies
Initiation of Dissertation research
Cumulative examinations

Year II:

Course work completion
Cumulative examinations
Research proposal and defense
Dissertation research

Year III:

Completion of cumulative examinations
Dissertation research

Subsequent Years:

Completion of Dissertation research
Preparation and submission of Dissertation
Research seminar
Oral defense of Dissertation

II. Entrance Examination

Entrance examinations are administered before the beginning of the semester. These exams test the preparation of graduate students at the Bachelor level and consist of examinations prepared by the faculty in each of the following areas: Biological, Inorganic, Organic, and Physical. New, entering graduate students must take all four of the exams.

Following completion of the exams, each entering student will meet with the Graduate Studies Committee to jointly discuss and outline his/her course of study for the first year. An inadequate undergraduate background in any area of chemistry, or an extremely poor performance on any entrance examination, can result in a student registering for a course, possibly below the graduate level, in order to improve the student's chances of success at the graduate level. If this situation occurs, a student is required to earn at least a "B" in the undergraduate class even though the course may carry no graduate credit (see below). If a student is not able to pass the undergraduate class with a grade of "B" or better (not "B-") it will be taken as an indication that she/he may not be capable of an adequate performance at the graduate level, and it might result in dismissal from the graduate program. Finally, during the first semester of graduate school no first year student will be allowed to take more than 11 hours of courses that carry graduate credit.

Following the end of both the first and second semesters of graduate work, student records are reviewed by the Graduate Studies Committee. This review is based on student's performance on entrance examinations, grades obtained in coursework, and comments solicited from faculty members. Students are expected to earn "A's" or "B's" (not "B-'s") in all chemistry courses they are required to take at the University of New Mexico as well as in any background courses (e.g., math or physics). **Students failing to meet these minimum expectations may lose financial aid, they may be limited to earning a Master's degree only, or they may be dismissed from the graduate program, depending on the faculty's evaluation of their overall ability and potential.** The decision by the Chemistry & Chemical Biology Graduate Studies Committee and faculty concerning student academic performance is final.

III. Course Work/Academic Performance

The Graduate Studies Committee recommends which courses students will take during their first year. This determination is based on student performance on the placement examinations (and the first semester course work), as well as, their area of interest. After the first year, the course requirements are determined by the student's Research Proposal Committee/Committee on Studies. Students may be required to take more than the minimum amount of course work.

Minimum coursework hour requirements for graduate degrees are established by the Office of Graduate Studies (see UNM Catalog). The Chemistry & Chemical Biology Department has additional requirements that must be met, including taking core courses given in each divisional area. The tables below summarize how these requirements apply to MS and PhD programs of the Chemistry & Chemical Biology Department. In addition to the hours, all coursework must satisfy certain grade requirements (see section III.D).

All Chemistry & Chemical Biology graduate students are expected to maintain the highest standards of honesty and integrity in academic and professional matters. Academic issues such as cheating, plagiarism, failure to maintain a GPA of 3.0 or greater, or failure to advance in courses and research at an adequate rate can carry severe penalties, *up to and including dismissal from the Chemistry & Chemical Biology graduate program*. Furthermore, all students are responsible for knowing and complying with all academic regulations. Ignorance of a rule or policy will not be accepted as a basis for waiving that rule. It is specifically noted that all graduate students who hold Teaching Assistantships are required to work the week before the fall and spring semester classes begin. This is a work week dealing with preparations for the upcoming semester. Attendance during this week is *mandatory* for all TA's. Graduate student attendance during the week of Final Exams is also mandatory. Violation of this will lead to serious

penalties, including up and including possible dismissal from the program. Do not plan travel, especially foreign travel, during these times.

A. Master of Science – Plan I (Thesis) – 24 hours total course work

1. A minimum of 18 hours formal coursework.
 - a. Twelve of the eighteen hours must be numbered 500 or above
 - b. Fifteen of these hours must be chemistry courses, including at least 3 core courses from three different divisions. These core courses include CHEM 511 for Organic; CHEM 536 for Inorganic; CHEM 540 for Analytical, CHEM 521 for Chemical Biology, and either CHEM 501 (Statistical Mechanics) or 504 (Quantum Theory) for Physical.
2. A minimum of two to a maximum of four hours of CHEM 625 (Divisional Seminar only) will count toward your degree. It is mandatory to sign up for CHEM 625 until you graduate.
3. Up to four hours of a combination of CHEM 650 (Research/Readings) or CHEM 627 (Instrument Operation).

Eighteen of the above 24 hours must be completed in residence at this University. An additional minimum of six hours of CHEM 599 (Thesis hours) must be completed.

B. Master of Science – Plan II (Course Work Masters) – 32 Hours total course work

1. A minimum of 24 hours of formal course work.
 - a. Eighteen of these hours must be numbered 500 or above
 - b. Fifteen of these hours must be chemistry courses, including at least three core chemistry courses from three different divisions. These core courses include CHEM 511 for Organic, CHEM 536 for Inorganic, CHEM 540 for Analytical, CHEM 521 for Chemical Biology, and either CHEM 501 (Statistical Mechanics) or CHEM 504 (Quantum Theory) for Physical. Students must have successfully completed these three core courses by the end of their third semester in graduate school. If not, the student will face dismissal from the program due to lack of adequate progress.
2. A minimum of two to a maximum of four hours of CHEM 625 (Divisional Seminar) will count toward your degree. It is mandatory to sign up for CHEM 625 until you graduate.
3. Enough additional hours of formal course work carrying graduate credit to meet the minimum requirement of 32 hours. Credit earned in chemistry seminar courses, CHEM 499 and CHEM 627 (Instrument Operation and department colloquia), can be included in this category. Divisional seminar credits cannot be used in this category. The student's Committee on Studies must approve courses taken for graduate credit outside the department. **CHEM 650 (Research/Readings) cannot be used by students earning a Plan II, with the exception of students earning the Plan I en route to a PhD in Chemistry & Chemical Biology at UNM.** Students earning the Plan I while en route to a PhD in Chemistry & Chemical Biology at UNM can substitute up to six hours of CHEM 650 for formal lecture or seminar courses. Twenty-six of the above 32 hours must be taken in residence at this University.

C. Doctor of Philosophy - 48 hours total course work

1. A minimum of 18 hours of formal course work in chemistry courses numbered 500 or above (this may include 500-level courses from other departments with the approval of the student's Research Proposal Committee/Committee on Studies). Required in the 18 hours are at least three core chemistry courses from three different divisions. These core courses include CHEM 511 for Organic, CHEM 536 for Inorganic, CHEM 540 for Analytical, CHEM 521 for Chemical Biology, and either CHEM 501 (Statistical Mechanics) or CHEM 504 (Quantum Theory) for Physical. **Students must have successfully completed these three core courses by the end of their third semester in graduate school. If not, the student will face dismissal from the program due to lack of adequate progress.**
2. A minimum of three to a maximum of six hours of CHEM 625 (Divisional Seminar) can be used toward your degree. It is mandatory to sign up for CHEM 625 until you graduate.

3. Enough additional hours of courses carrying graduate credit, CHEM 650 (Research/Readings), and/or CHEM 627 (Instrument Operation) to meet the minimum total hours.

An additional minimum of 18 hours of CHEM 699 (Dissertation) is required. Note that a student may not enroll in 699 prior to the semester in which the comprehensive requirement is completed. Only 30 of the 32 hours used toward a Plan I Master's degree may also be applied toward a PhD degree. For transfer students and those who already have a Master's degree, at least 12 hours excluding CHEM 699 (Dissertation), CHEM 650 (Research), and CHEM 623/625 (Seminar) must be completed at this University. For conditions of transferable credit, see the University catalog.

D. Course Grading - In courses where letter grades are given, graduate students are graded according to the following system

A	4.00 grade points per credit hour
A-	3.67 grade points per credit hour
B+	3.33 grade points per credit hour
B	3.00 grade points per credit hour
B-	2.67 grade points per credit hour
C+	2.33 grade points per credit hour
C	2.00 grade points per credit hour
F	0.00 grade points per credit hour

The following courses are Credit/No Credit (CR-NC) courses

CHEM 499 - Seminar – Current research
CHEM 599 - Master's Thesis
CHEM 623 - Department Seminar
CHEM 625 - Divisional Seminar
CHEM 650 - Research/Readings
CHEM 699 - Dissertation

No more than 6 hours of classes with grades of "C" or "CR" may be counted toward any master's degree. "NC" grades are not calculated in the grade point average. Students are placed on probation when they receive two "F's" or "NC", regardless of the number of hours involved. Students will be suspended if a third "NC" or "F" grade is received. Graduate students are not allowed to drop a course without the permission of the Chairman of the Graduate Studies Committee or the Chairman of his/her Committee on Studies.

Progress (PR) is used for Thesis or Dissertation in progress, but not yet completed.

The academic records of all graduate students are reviewed every semester. Students must maintain a cumulative GPA of at least 3.0 on all courses taken at UNM that carry graduate credit that are required for their degree by either the Graduate Studies Committee or their Committee on Studies. Students may include no more than two "C's" in their program submitted in the Application for Candidacy. Students placed on probation for having cumulative GPA's of less than 3.0 are subject to academic suspension if they fail to raise their GPA's to 3.0 during the next 12 credit hours of formal course work or during the next four semesters (whichever comes first) for all courses that carry graduate credit or that are required by the Graduate Studies Committee. In addition, according to UNM policy (see UNM Catalog), students on Type 1 or Type 2 probation are not eligible to hold assistantships of any kind, including Research Assistantships supported by professors.

E. Credit Hours Per Semester

All assistantship contracts allow a tuition waiver of 12 hours for each fall and spring semester. Hours not used in the fall semester can be carried forward and used during the spring semester, and hours not used in the spring semester can be carried forward and used during the Summer Session. Unused hours cannot be carried beyond the Summer Session. Individual graduate students are responsible for any costs incurred while taking more than the 24 hours allowed by the assistantship contract. Foreign and domestic students are not required to enroll in coursework during the summer unless he/she is graduating during the Summer Session. Teaching Assistants receive a waiver of 3 hours for the summer. Research Assistants should consult with their advisors before enrolling for hours during the summer. Following the initial semester in Graduate School, all Research, Graduate, and Teaching Assistants are expected to enroll for twelve hours each semester. The usual way to satisfy this requirement, after course work requirements have been met, is by enrolling in CHEM 623/625 (Seminars), CHEM

650 (Research/Readings), and either CHEM 699 (Dissertation) or CHEM 599 (Master's Thesis). **The Graduate Studies Committee or the Chairman of the Committee on Studies must approve in writing any non-chemistry courses.** Students should contact their Research Directors for advice on details.

IV. Selecting a Research Director or Plan II Advisor

CHEM 499 (Seminar – Current Research; one credit) is offered in the fall semester and in the spring if demand warrants, acquainting new graduate students with the research activities of the Department and possibly other closely-related departments. All new graduate students are required to register for this course. In this course, faculty members describe their research interests, and other topics of interest to graduate students such as safety, use of the library resources, and a discussion of careers in chemistry will also be covered. To obtain credit for the course, graduate students must attend all presentations, although two excused absences or tardiness *from the research presentations only* may be permitted with the permission of the chair. It is not permissible for students to miss the talks on chemical safety, and if a student misses any of the chemical safety talks it is required that he/she make the session up prior to beginning work in the laboratory. Although **strongly** encouraged to do so as soon as possible in the first semester, **PhD and Plan II Master's students entering in the fall are required to choose a Research Director/Advisor by two weeks after the first day of the spring semester (roughly January 31).** Students beginning in the spring will need to pick a PhD advisor by the time determined by the Graduate Studies Committee, but the decision should be made no later than the end of the spring semester. Each student must interview and discuss research opportunities with at least two faculty members other than the Research Advisor and obtain all three signatures on the "Research Director/Advisor Selection Form" prior to making the final decision. This form is available from the Advisement Coordinator. The student should keep in mind that a faculty member is not required to accept a student into his/her group just because a student wants to join that group. It is the student's responsibility to find a research mentor who will accept him/her into the group; if a student cannot find a research mentor by the required time then it is obvious that the student will not be able to meet the requirements in the Ph.D. program, and must leave the program.

A student earning a degree in chemistry must choose a Research Director/Advisor from a member of the Department faculty, or in rare cases, from the list of approved mentors who reside primarily in other departments. In some cases (e.g., some sort of interdisciplinary project), it might be appropriate for a student to choose a person outside the Chemistry & Chemical Biology Department as a co-mentor along with the Chemistry & Chemical Biology Department co-mentor. **Financial support of any type beyond the second semester (including the summer) is contingent upon completion of this requirement.** All first-year students should obtain a copy of the "Research Director/Advisor Selection Form" from the Graduate Advisement Coordinator. This form must be signed by three total faculty members, including the Research Advisor, certifying that the student has met with them to discuss research. Upon selecting a Research Advisor, the student should complete the bottom of the form, get their Research Director/Advisor to sign the form agreeing to accept the student into their group, and return the form to the Graduate Advisement Coordinator. The form must be completed and turned in prior to the end of the student's second semester in the program.

A student who has selected a Research Director might find him or herself in a situation where a new Research Director must be chosen. If that is the case, the student should undertake the task of selecting a new Research Director. This process should be undertaken with open discussion between all the parties involved, including the Graduate Studies Chair if appropriate. Once a new Research Director has been selected, the student should notify the Graduate Coordinator and, with the advice of the new Research Director, select a new Committee on Studies/Dissertation Committee. The new Research Director and new Committee on Studies must be formally in place by the end of the semester in which the student decides to switch Research Directors. The student's Committee on Studies will then decide what portion of the student's completed work can be used towards his or her PhD Dissertation. The Committee on Studies will examine the student's progress and assess whether the student has the appropriate skills and background to undertake the newly selected research program. The committee might require the student to take new or additional courses, redo a research proposal (in the case where the student had completed that part of their program), or pass new/additional cumulative exam's more closely related to the student's new research area. For a variety of reasons it may occur that the PhD student cannot find another research director who is willing to accept the student and serve as the mentor. In the situation where a student cannot find another advisor, the student must leave the department, as there will be no possible to meet all requirements for the PhD degree.

V. Student Advisement, Graduate Studies Committee and Research Proposal Committee/Committee on Studies

A. Advisory Functions of the Graduate Studies Committee (GSC)

1. The Graduate Studies Committee guides students until their Research Director and Research Proposal/Committee on Studies are selected. Some of the duties of the GSC are:
 - a. to advise students what classes to take their first two semesters
 - b. to review the progress of graduate students annually and notify them of any requirements in their programs that should have been fulfilled by that time
 - c. to assist students in selecting a Research Director and a Research Committee/Committee on Studies
 - d. to advise students with special problems or other issues that arise during their course of studies.

B. Master's Committee

Following the selection of a Research Director in the case of a Plan I Masters candidate, or an Advisor, in the case of a Plan II Masters candidate, the student must select the members of a Masters Committee. The committee has a minimum of three members. The Research Director/Advisor serves as the committee chair. The members of this committee become responsible for guiding the students through their Masters program. At least one of the members besides the committee chair must be from the area in which the student's research or studies are to be conducted. The Graduate Coordinator should be notified of the membership of this committee. The duties and functions of the committee are described in the Graduate Bulletin. These duties include the administration of the oral defense of the Plan II Masters Examination. Students are expected to meet periodically with their Masters Committee to review progress toward earning their degree. Depending on their field of research or studies, students may be required by their Masters Committee to exhibit competence in additional skills such as mathematics, physics, computer programming, electronics, or foreign languages.

C. Research Proposal Committee/Committee on Studies (Dissertation Committee)

In the Chemistry & Chemical Biology Department, the Committee on Studies also serves as the Dissertation Committee, and all references in this handbook to the Committee on Studies also refer to the Dissertation Committee. Following the selection of their Research Director, a PhD student must select a Committee on Studies or a Research Proposal Committee. Ideally, the composition of these two committees is identical, but in some cases, the required outside member of the Committee on Studies will be absent in the Research Proposal committee. This Dissertation Committee consists of a minimum of four members who will be responsible for guiding the student through their graduate studies. The student's Research Director serves as the committee chairperson. At least one of the other members must be from the divisional area in which the student's research is to be conducted, one of the members must be from the Chemistry & Chemical Biology Department but outside the specific division of study, and one of the other members must be a tenure-track professor from another graduate unit within the University for the Committee on Studies. In rare cases, it is possible for students to have a tenure or tenure-track faculty member from another university to serve as the outside member; however, the outside faculty member must be approved by the Office of Graduate Studies prior to serving on the Committee. See the Advisement Coordinator for the procedure to do this, if desired. For the Research Proposal committee this last outside member is optional; however, the first three members are required. If the option of not having an outside member on the Committee on Studies is chosen for the Research Proposal committee, then the student must find an outside member to be added to the Research Proposal committee in order to form the official Committee on Studies. Students are **strongly** encouraged to simplify matters and have the outside member required on the Committee on Studies also present on the Research Proposal Committee. Students **do not** have the option of removing members of the Research Proposal Committee upon conversion to the Committee on Studies, only adding an outside member if not already present. Any questions on the committee composition can be answered by the Advisement Coordinator or the Graduate Studies Chair. Other members may be added to the committees, but committees with more than five members are strongly discouraged. The Graduate Studies Chair and the Office of Graduate Studies (OGS) must approve all committee members. This form can also be obtained from the Advisement Coordinator.

Students are expected to meet periodically with their Committee on Studies to review progress on research problems and appropriate degree requirements. The committee will also administer the research proposal part of the comprehensive sequence and serves as the examiners on the final oral Dissertation defense.

Depending on their field of research, the Committee on Studies may require the student to exhibit competence in such additional skills as mathematics, physics, computer programming, electronics, or foreign languages.

VI. Cumulative Examinations

The purpose of cumulative examinations is to help students develop a thorough, general knowledge of their chosen field and a familiarity with modern advances in it as described in current chemical literature. The form and content of cumulative examinations are determined by individual divisions.

Eight cumulative examinations (CUME'S) are given annually by each division on specific dates set by the Graduate Studies Committee (generally the first Friday of the months of September - December and February - May) and announced at the beginning of the Fall semester. Students are required to begin taking the CUME sequence no later than the beginning of their third semester in graduate school. However, students may begin the CUME sequence during their second semester. If they choose to do this, any CUME'S failed during the second semester will not be counted as "attempts", but any passes will count as "passes".

On a given examination day, students are given copies of the examination in all areas and are given two hours to complete at least one of them. If a student takes more than one exam within the allotted time, it is still considered a single attempt.

The importance of strong backgrounds in students' fields, familiarity with current literature, and active participation in the seminar programs cannot be overemphasized. Once students begin taking the cumulative examinations, they are required to continue taking them each time exams are offered until the required number is passed - missing an exam is considered a "fail" unless prior arrangements are made with the Graduate Studies Chair. For PhD students, of the five total cumulative exams needed to advance onwards, at least three of these exams must be in their major field; for MS students, of the three exams needed to advance, at least two must be in their major field. For students engaged in interdisciplinary research, however, specific alternative requirements may be imposed by their Committee on Studies. **PhD candidates (including those who already have a Master's degree) must pass at least two of the first eight exams attempted and five out of a maximum of 16 attempts. Master's thesis candidates must pass at least two of the first eight exams attempted and three out of a maximum of 14 attempts.**

Cumulative exams are not required for the course work MS.

The faculty member who writes each cumulative examination also grades it and is responsible for notifying the Graduate Coordinator of the results within two weeks of the examination. CUME'S are graded on a pass "P" or fail "F" basis. Students are permitted to review their graded examinations in the office of the Advisement Coordinator, room 102

Under certain circumstances, students earning a degree through the Los Alamos Graduate Center or as part-time students may substitute a comprehensive examination for the cumulative examinations. All students in residence at the Albuquerque campus, pursuing a research oriented degree, must participate in the cumulative examinations while they are here, regardless of plans to take a comprehensive examination. Students failing to pass cumulative examinations at the required rate will not be permitted to take a comprehensive examination instead. Permission to take a comprehensive examination is granted only by petition to the Graduate Studies Committee. The petition must be supported by the students' Committee on Studies.

If permission for the comprehensive examination is granted, it will be prepared, administered, and graded by the students' Committee on Studies. Each member of this committee writes and grades a section of the exam. Students must earn an average score of 70% over all parts of the exam to pass. Should students fail the exam, one additional attempt will be permitted within not more than one calendar year. The material on the exam is determined by the Committee on Studies and announced to students at least one full semester in advance of the exam date.

VII. Seminars

The Department of Chemistry & Chemical Biology has a two-part seminar program:

A. Divisional Seminars

Divisional seminars deal with material in each of the four traditional areas of chemistry, which are formalized in CHEM 625 (Chemistry Seminar). Those students in the Biological Chemistry Division will hold joint divisional seminars with the Organic Division. With the exception of their first fall semester, students must register for a section that deals with their area of concentration every semester until they graduate. During students' first fall semester, they must register for Chemistry 499 (Chemistry Research Seminar). During a student's second and later semesters, he/she must register for a divisional seminar. **All graduate students are expected to register for CHEM 625 and attend divisional seminars for as long as they continue in the graduate program.**

A minimum of three hours of credit toward a PhD degree and two hours of credit toward a degree must be earned by presenting divisional seminars (three for PhD, two for MS). CHEM 499 (Chemistry Research Seminar) and CHEM 627 sections involving computer and instrument training count toward the overall course work requirement,

but not toward this divisional seminar requirement. Grades are assigned by participating faculty in each division as either credit "CR" or no credit "NC".

Part-time students who work at Los Alamos National Laboratory may register for CHEM 625 if they make arrangements to attend weekly seminar at LANL and give their presentation at a Divisional Seminar (CHEM 625) at UNM. The students' Committee on Studies must approve these arrangements at the beginning of the semester. The LANL member of this committee reports on students' attendance at LANL seminars to the faculty member responsible for the corresponding CHEM 625 section that grades the students accordingly.

B. Departmental Seminars

Departmental seminars consist of lectures given by invited speakers. They are generally held on Friday afternoons at 3:00 pm. **All graduate students are expected to register for CHEM 623 and attend departmental seminars for as long as they continue in the graduate program.** Missing more than two Departmental Seminars in one semester will result in a "NC" being given.

VIII. Research Proposal

A. The Research Proposal/Comprehensive Exam

The research proposal, seminar, and oral defense constitute the Doctoral Comprehensive Examination required of all doctoral students. The proposal/seminar/defense component of the examination must be completed by the last day of the tenth week of the student's fourth semester in the program (not including summer), unless an extension is approved by the Research Proposal Committee and the Graduate Studies Committee. If students fail the defense, they may be allowed an additional attempt by the Research Proposal Committee. This attempt must be completed no later than the end of the tenth week of the fifth semester. The Research Proposal Committee may require students to repeat any or all parts of the proposal/seminar/defense requirement. A second failure on any part of the requirement will prevent students from continuing for a PhD degree. As well, there may be additional guidelines and requirements set by each individual division – the student is responsible for checking these additional guidelines with their PhD mentor and members of their chosen division.

All doctoral students must submit a signed Announcement of Exam form to the Chemistry & Chemical Biology Department Advisement Coordinator at least two weeks prior to the scheduled RP. See the advisement coordinator for a copy of this form.

B. Rules and Guidelines

The research proposal represents a thoroughly documented summary of the research that students expect to perform prior to writing their Dissertation. The written version of the proposal should consist of a long narrative (approximately ten pages) describing the intended research project for a PhD degree. The written proposal should be fully documented, with appropriate references to the primary chemical literature. It should state clearly and concisely the objective of the research and provide sufficient background to develop the rationale for undertaking the research. Finally, key aspects of the planned method should be described briefly and their viability documented. The fully referenced abstract is distributed to the students' Research Proposal Committee as well as the faculty and students in the division of the research at least two weeks prior to the oral defense. A copy should also be provided to the Students Affairs Coordinator. More specific details are given below.

The oral segment of the requirement consists of two parts:

1. A one-hour seminar (this may also be a divisional seminar) on the research topic, detailing the significance, background, rationale and planned method for the proposed research is given prior to the defense.
2. An oral defense before the Research Proposal Committee and interested faculty will be undertaken following the seminar.

The seminar should be similar in format to the presentations typically given in the student's divisional seminar program. Since this presentation concerns material with which students should be intimately familiar, performances of the highest quality are expected.

The subsequent defense of the research proposal represents the oral examination traditionally required for the PhD degree in chemistry. It is a test of the student's overall understanding of chemistry and is based on material covered by the written research proposal and the seminar. The defense is conducted by the student's Research

Proposal Committee. It may begin with a short, oral review of the student's proposed research, or questioning may begin immediately. The examination by the Research Proposal Committee is open only to faculty members. Any faculty member may attend, and participate in, the examination. The students' Research Directors are responsible for ensuring that the defense is appropriately publicized.

To receive a passing grade by the committee, the student must demonstrate:

1. Familiarity and competence in all areas of science relevant to the proposed Dissertation research.
2. Mastery of the specific area of chemistry in which the research specializes.
3. High ability for creative research and problem solving.
4. Ability to communicate clearly and effectively.

In particular, lack of understanding, basic knowledge, or ability in an area that the committee deems to be crucial to the independent conduct of the proposed research will be considered grounds for failure.

All doctoral students must submit a signed Report of Exam form to the Chemistry & Chemical Biology Department Advisement Coordinator immediately following the RP. See the advisement coordinator for a copy of this form.

Summary of Research Proposal Guidelines:

The written RP must contain the following components:

Abstract – approximately 400 words, must state objectives and goals

Introduction – approximately 1.5 - 2 pages, brief literature overview

Statement of Research Problem - not more than 0.5 page

Statement of Goals and Objectives - not more than 0.5 page

Research Plan - approximately 3 – 4 pages

Conclusion - approximately 0.5 page

References

The total length should not exceed approximately 10 pages, including references, figures, schemes, and equations. The style should be 12 point Times or Times Roman font, single spaced with 1" margins all around. A cover page should be included which has the title of the RP, the student's name, and the names of the committee members listed.

Oral RP Presentation Guidelines:

1. The organization should be along the same lines and use the same sub-headings as the written presentation.
2. The oral presentation should target for 40-45 minutes in length, excluding questions.

IX. Application for Candidacy (PhD) or Program of Study (MS)

A. Application

Doctoral students should meet with their Committee on Studies (Dissertation Committee) and prepare an Application for Candidacy when they have completed 12 hours beyond a MS or its equivalent. Students will not be advanced until they have completed all required course work (except Dissertation), passed the required number of cumulative examinations, and successfully defended a research proposal. Students are not permitted to register for Dissertation credit until their Application for Candidacy has been approved by the Dean of the Office of Graduate Studies. This form can also be obtained from the Advisement Coordinator.

Master's students should also meet with their Master's Committee and submit the Program of Study form at the beginning of their final semester. This form can also be obtained from the Advisement Coordinator.

B. Transfer Credit

Students who have completed graduate-level course work at an accredited institution other than UNM may apply to have some hours of credit transferred toward their degree program at UNM. The University has guidelines for

these transfers that must be met. See the University catalog for details. Chemistry & Chemical Biology also has limitations on course work transfer and they are described below.

Generally, the credits cannot have been already used toward a degree, a grade of "B" or better received, and an equivalent course must be taught at UNM. The request for transfer of credit is done on the Application for Candidacy or Program of Study Signatures on this form by the student's Committee on Studies indicates their approval of the credit transfer.

The Chemistry & Chemical Biology Department limitations on transfer credit are as follows:

1. MS Degrees: Only six hours of course work can be transferred.
2. PhD Degree: Only six hours of the required 18 hours of course work numbered 500 or above may be transfer credit.

X. Research Thesis/Dissertation

Candidates for a PhD degree are required to perform significant and independent research that culminates in the preparation and defense of a Dissertation. Each student's research is conducted under the supervision and direction of their Dissertation Committee. Thesis candidates are expected to investigate a research problem of more limited scope and present their results in the form of a Thesis. Oral defense of the Dissertation/Thesis is a public seminar. During seminars, students summarize their research; this is followed by an oral examination by the student's Dissertation/Thesis committee.

Students completing a Plan I Masters or PhD must prepare a Dissertation/Thesis in the proper format. Students should consult the graduate bulletin and/or obtain detailed format guidelines from the Office of Graduate Studies. Two unbound copies of the Dissertation/Thesis must be submitted to the graduate school. One bound copy of the approved Dissertation/Thesis must be submitted to the Department Advisement Coordinator. All students must submit to the Chemistry & Chemical Biology Department (2) two copies of the final Thesis/Dissertation for binding. The department will cover the cost of (2) two copies (one for the students' chair and one for the department library). If the student wishes more than two copies be bound, the student will need to cover the cost of any additional copies.

Continuous enrollment in Dissertation (CHEM 699) or Thesis (CHEM 599) hours is required in subsequent semesters (exclusive of summer) after initial enrollment in CHEM 699 or CHEM 599 until the Dissertation/Thesis is accepted by the Dean of Graduate Studies. This rule applies whether or not the candidate is enrolled for other credit hours. Candidates who fail to register for CHEM 699 or CHEM 599 in any semester must pay tuition and late fees for each missed semester and petition the Office of Graduate Studies for reinstatement. In extraordinary circumstances, the Dean of Graduate Studies may waive the requirement for continuous enrollment upon presentation of a written request from the Dissertation Director and the graduate unit. Doctoral candidates must be enrolled for a minimum of 3 hours of CHEM 699 during the semester in which they complete their degree requirements, including the summer session. Thesis students must be enrolled for at least 1 hour of CHEM 599 or other project related graduate course during the semester in which they complete their degree requirements, including the summer.

All students must submit a signed Announcement of Exam form at least two weeks prior to their scheduled Thesis/Dissertation Defense, and submit a signed Report of Exam Form immediately following their defense. A public notice of the Thesis/Dissertation Exam defense should be made by posting announcements within the Department at least one week ahead of the scheduled defense. All students must also submit a signed Report of Thesis/Dissertation Form for each committee member (one form for each member). These forms should be submitted to the Advisement Coordinator. See the Advisement Coordinator for a copy of these forms.

X. Plan II Masters Examination

All Plan II Masters candidates must pass a Masters Examination. This examination is administered by the student's Masters Committee. Some part of this exam must be oral. The exact nature of the exam is to be agreed upon by the student and the student's Masters Committee. Examples of examination formats include:

1. A library research topic, a written report on the topic given to the committee, and the report defended orally in front of the committee.
2. A library research topic, a written abstract distributed to the committee and subsequent public seminar on the topic, followed by an oral examination by the committee.

3. A research proposal prepared and defended in front of the student's Masters Committee (this examination follows the exact format of the PhD Research Proposal.)
4. A research report in the case of a student who might have carried out some research (the report might be written or oral), followed by an oral examination on the research in front of the student's Masters Committee.

The above are only examples. The student and the student's Masters Committee can agree on the format that best fits the student's long range goals and program of study.

All Plan II Master's students must submit a signed Announcement of Exam form at least two weeks prior to the scheduled Master's Exam, and submit a signed Report of Exam Form immediately following their exam. These forms should be submitted to the Advisement Coordinator. This form can also be obtained from the Advisement Coordinator.

XII. Financial Aid

A. Financial Aid Status

The following classes for denoting students' financial aid status have been defined:

1. Self-Supporting. Self-supporting students include 1) applicants accepted into the program who did not request, or were not deemed qualified for, departmental financial aid, 2) foreign students with an adequate academic background, but whose English speaking ability or ability to operate effectively as Teaching Assistants is undetermined, and 3) students whose potential performance as Teaching Assistants seem questionable for any reason.
2. Teaching Assistants. This classification is the most common for first-year graduate students offered financial aid. Teaching Assistants may be placed in any of the following classes.
 - a. Temporary Status: Students whose ability as Teaching Assistants is not questioned, but to whom there is no need or desire to make any kind of long-term commitment are hired on a temporary basis.
 - b. Probationary Status: This classification is used when there is some question as to the graduate student's ability to perform as a Teaching Assistant. Probationary status applies for a specified length of time, usually one semester. Following this probationary period, students' performances as Teaching Assistants are evaluated and recommendations about continuing status are made.
 - c. Regular Status: This is the classification normally awarded to entering graduate students. It carries a commitment from the Department for a certain period of time of TA/RA support as long as the student maintains good academic standing and performs adequately in academic studies and Teaching/Research Assistant duties.
3. Graduate Assistants. This classification is used to hire graduate students on a temporary or semester-by-semester basis for tasks not directly related to teaching. An example of a GA assignment might be as principal operator of certain instruments. For details concerning this classification, see the Financial Aid Section of the Graduate Bulletin.
4. Research Assistants. This classification describes the status of students earning a stipend while working on a funded research project. With the exception of the maximum salary, which is limited by the Department, decisions concerning RA's are made by the principal investigator for the grant funding the RA. Further details concerning this status may be found in the University catalog.

B. Petition for Change of Status

Graduate students have the right to petition for a change in their financial aid status. This is especially true when students did not request aid when applying to the program, or were accepted without aid. If students are progressing well in the program and their needs justify support, they may apply for a change in status. At that point, the students' potential abilities to perform as Teaching Assistants are evaluated and, if their performance is expected to be satisfactory, Teaching Assistantships can be awarded in probationary, regular, or temporary status.

XIII. Teaching Assistant Performance

A. Expectations

The performances of all Teaching Assistants are reviewed every semester. The Undergraduate Laboratory Supervisor is responsible for preparing a written evaluation of each Teaching Assistant under his or her direction each semester. These evaluations should be brief when TA's have done an adequate job. When TA's have performed inadequately, the evaluation should be detailed and contain specific information as well as recommendations for improvement. For exemplary performances, the evaluations should provide documentation for use when students are considered for teaching awards. For beginning graduate students, the first summer session **cannot be taken in large part as vacation or leave** if the student has any desire to continue in the program as a TA or an RA in the following Fall semester. In other words, financial assistance to any student who takes off more than three weeks in the initial summer session will be denied during the Fall semester. Additionally, for students in their second (or later) years in the Graduate Program who are still listed as Teaching Assistants will also have their Fall teaching assistantships revoked if they take off more than three weeks in the summer session. Discussions of this policy can be undertaken with the Chair of the Graduate Studies Committee if there are any questions.

B. Teaching Performance Committee

The Teaching Performance Committee consists of four members: a representative of the Graduate Recruitment and Selection Committee, a representative of the Graduate Studies Committee, the Undergraduate Laboratory Supervisor, and one additional member. This Committee is responsible for reviewing Teaching Assistant performance and has the power to change the Teaching Assistant status. Consistently poor or irresponsible performance by Teaching Assistants may result in the students being placed on probationary status, or in extreme cases, losing their financial aid altogether. A Teaching Assistant who fails to demonstrate the ability to effectively communicate in English with the students in his/her section, or otherwise fails to meet the expectations printed on the TA contract, will be considered to be performing poorly. The committee is also responsible for the selection of recipients of the Outstanding Teaching Assistant Award. This award consists of a cash award made to the outstanding Teaching Assistants over an academic year. Evaluations of performance will be based on undergraduate student's comments and the Undergraduate Laboratory Supervisor's recommendations.

XIV. Limitations on Financial Aid

The Chemistry & Chemical Biology Department restricts departmental financial aid in the form of Graduate and Teaching Assistantships and Fellowships to a maximum of five calendar years from the date of entrance for students in the **PhD program** and two years for those in the program. At the end of four years, students' overall progress will be evaluated to determine their eligibility for a fifth year of support.

XV. Summary Suspensions

If, in the opinion of the Department faculty, a student shows little promise of completing the degree program, the Department will notify the student and the Graduate School in writing that that student is suspended from further work in the program.