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Requirements for the M.S. and Ph.D. Degrees Revised September 19, 2017

In addition to the Chemistry Department Regulations specified in this booklet, all graduate students must read and understand the regulations concerning graduate studies given in the current issue of the <u>UCR General Catalog</u>. In particular, graduate students should carefully note the deadlines for registration, study list filing, filing of thesis, dissertation, *etc.*, listed in the <u>Academic Calendar</u> within the online <u>Schedule of Classes</u>. Questions regarding interpretation of the regulations should be discussed with the Graduate Advisor.

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1. Orientations Exams

Who MustEvery student admitted to regular graduate status as a prospective candidate for the M.S.Take Themor Ph.D. degree in Chemistry is required to take orientation examinations in the four
subdisciplines of analytical, inorganic, organic and physical chemistry at the beginning of
the first quarter in residence. The purpose of these examinations is to assess the
student's undergraduate preparation so that the Graduate Study Committee may
recommend suitable course work.

When GivenThe orientation examinations are given shortly before the registration period of the
quarter, *i.e.*, approximately 1-2 weeks prior to the start of instruction. Students will be
notified of the specific exam dates and location via their university-provided email
account at least two weeks in advance. The scheduling information and may also be
obtained through correspondence with the graduate advisor. Copies of previous
examinations are not made available for distribution, but suggested textbooks which
cover the material in the examinations, are sent to all entering students.

2. Prescribed Course Work for the Ph.D. and Master's Plan I (Thesis) Programs

CourseA course program will be required for each Ph.D. and Master's Plan I student by theProgramGraduate Advisor and Graduate Study Committee based on the student's chosen
subdiscipline (analytical, inorganic, organic or physical) and performance on the
orientation examinations. The goals of this requirement are preparation for research and
the meeting of other degree requirements. For students with a normal B.S. level
preparation, the typical course pattern for each subdiscipline major is as follows:

Analyticala minimum of 3 courses selected from CHEM 221ABCDE plus 2 coursesInorganicCHEM 231ABC plus 2 coursesOrganica minimum of 3 courses selected from CHEM 211ABCDE plus 2 coursesPhysicala minimum of 3 courses selected from CHEM 201ABCDE plus 2 courses

In the event that a student's performance on one (or more) of the orientation examinations outside the chosen subdiscipline is judged unsatisfactory, the deficiency(ies) must be rectified. The student, in consultation with the Graduate Advisor, may choose <u>one</u> of the following means to correct the deficiency(ies):

- A. Repeat and pass the next scheduled orientation examination in the subdiscipline(s) of deficiency. **Only two chances** will be given for passing each orientation exam.
- B. Enroll for credit in a graduate-level course in the subdiscipline(s) of deficiency and earn a satisfactory grade ("B" or better).
- C. Enroll for credit in an upper-division undergraduate level course in the subdiscipline(s) of deficiency and earn a satisfactory grade ("B" or better). Requires advance Graduate Advisor approval.

The orientation examination program and the method of removal of the deficiency(ies) also applies to Master's Plan II candidates. Note that University unit requirements must be met for the Master's Plan I. These are:

- 1) a minimum of 36 quarter units of graduate or upper-division under-graduate work,
- 2) a minimum of 24 of the required units in graduate level courses (under certain circumstances, CHEM 110A, 110B, 113, 125, 150A, 150B may apply). Only up to 12 of these units can be in graduate research (CHEM 297 or 299),
- 3) a maximum of 12 units of seminar courses (CHEM 250 to 254). Ph.D. students who wish to qualify for the Master's Plan I should refer to Sections (8) and (9) of this document.

3. Prescribed Course Work for the Master's Plan II Course Program

CourseThe orientation examination requirement discussed in the preceding Sections (1) and (2)Programalso applies to the Master's Plan II (course) program. In addition, the required course
work for students in the Master's Plan II program includes a minimum of 18 units in
regular lecture courses in the Chemistry 200-249 series (under certain circumstances,
CHEM 110A, 110B, 113, 125, 150A, 150B may apply). Note that courses numbered CHEM
250-254 (up to 12 units), but <u>not</u> those numbered CHEM 260-289, may apply towards the
University's 36 unit requirement for Master's Plan II students.

4. <u>Seminar and Teaching Requirements</u>

All graduate students in the Chemistry Department are required to register <u>every quarter</u> for the Chemistry Department Colloquium series (CHEM 250). In addition, all students must register in one seminar series appropriate to their chosen subdiscipline (CHEM 251, 252, 253 and 254 for analytical, inorganic, organic and physical chemistry students, respectively). <u>Attendance at all seminars is mandatory</u>.

All chemistry graduate students must take a Professional Development class (CHEM 401) during the first year of residence. This is a one hour per week, 1 unit class typically offered during the Fall quarter.

Every Ph.D. student must serve as a Teaching Assistant (TA) for a minimum of three courses.

5. Graduate Research

Choosing aAll students with the exception of those working for a Master's Plan II degree are urged to
choose a research director by the second or third quarter of residence. The research
director must be either a faculty member or a cooperating faculty member in the
Department of Chemistry. The choice of a research director is based on a mutual
agreement between the student and the faculty member. As soon as such an agreement
has been reached, the student should notify the office of the Graduate Advisor by
submitting a Research Group Selection Form
to ensure that records are kept up to date.
In unusual cases, a student may be engaged in a research program under the
simultaneous direction of two Chemistry Department faculty members with the mutual
agreement of all concerned.

6. Second-Year Research Evaluation (SYRE)

Scheduling Students seeking advancement to candidacy for the Ph.D. degree must undergo a Second-Year Research Evaluation (SYRE). The SYRE must take place by the end of the student's fourth academic quarter of residency and is administered by a three-member committee of the Chemistry faculty, one of whom is the student's dissertation advisor. The Chair of the SYRE Committee will be someone other than the dissertation advisor. Typically, these same three faculty members will also serve on the Qualifying Examination committee, with the Chair of the SYRE Committee continuing on as Chair of the Qualifying Examination committee.

Exam Format The SYRE consists of a written research proposal based on the student's dissertation

Evaluation

research and an oral presentation and defense of that proposal. **Detailed instructions are provided separately in the** *Procedures for the Second Year Research Evaluation* **document.** The student will be evaluated based on the quality of the written document and the performance during the oral examination. A student will receive a single grade of Pass, Qualified Pass, or Fail. A *Pass* signifies that the student has made satisfactory progress in research and is on track to pass the Qualifying Examination. A *Qualified Pass* signifies that a student's progress in research is reasonable, but that improvement is needed, and this improvement should be demonstrated at the time of the Qualifying E xamination. A *Fail* signifies that a student has not made satisfactory progress in research to date. A student who fails the SYRE will not be required to undergo a second evaluation; however, such students will be placed on notice that they are not on track to pass the Qualifying Examination unless major steps are taken to correct serious deficiencies in research performance.

7. Review of Students

The Graduate Study Committee regularly examines each student's progress in satisfying remedial course work, normal course work, cumulative examinations, research and teaching (in the case of Teaching Assistants).

Annual ReviewThe Chemistry faculty meets annually (usually around June) to evaluate each student, and
of Graduateof Graduateon the basis of the deliberations at the annual review, the Graduate Advisor forwards a
report on each student to Graduate Division (the student and the research advisor also
receive copies). Students should be aware of the following items.

- A. The minimum grade point average requirement for satisfactory graduate status, TA and GSR appointments, and fellowships is **3.00**.
- B. There is an 18-quarter (6 academic years) limit on TA and GSR appointments.
- C. There is a 3 course minimum TA requirement.
- D. Timely completion of the advancement to candidacy examination for PhD. students is required. As stipulated elsewhere in this document (Section 10), the Qualifying examination must be taken within six months after completion of the orientation exams and second-year research evaluation as well as the course requirements.
- E. The normative time for Ph.D. students is 15 quarters and for M.S. students, it is 6 quarters. A student is making unsatisfactory progress after 18 quarters and 9 quarters, respectively.

In the event that the student's performance or progress in these areas is unsatisfactory, the Graduate Study Committee may at any time, with the approval of the faculty, issue a warning, restrict the student to a Master's degree program, recommend dismissal to the Graduate Division, or take other appropriate action. Additional reasons for dismissal are listed in Section 18, and also provided in the UCR <u>Graduate Student Handbook</u>

8. Change of Degree Objective

Change to M.S. Degree Course Requirements	Students admitted to the Ph.D. degree program are not precluded from working towards a M.S. degree if they so choose. Students should note the course requirements for the Master's Plan I (Thesis) and Master's Plan II (Comprehensive Examination) degree programs since there are specific regulations concerning course work for this degree. Students should also be aware that the content of a Master's Plan I thesis cannot be used
	in the Ph.D. dissertation except in the form of a reference. The procedure for
Thesis	advancement to candidacy for the M.S. degree is outlined in Section (8). If such a change
Material Limitation	in degree objective is contemplated, the Graduate Advisor must be informed.
	Those students who were originally accepted in the Ph.D. program and were subsequently restricted to the M.S. degree must complete the Master's Plan I degree with an oral examination in order to be considered for possible readmission to the Ph.D. program.
Change to Ph.D. Degree	A student whose original acceptance was limited to a Master's Plan I or Master's Plan II degree must generally complete this degree requirement prior to consideration for acceptance into the Ph.D. program. In certain cases of exceptional performance, the Graduate Study Committee may admit the student to the Ph.D. program without completion of the M.S. degree requirements.

9. Advancement to Candidacy for the M.S. Degree

To apply for advancement to candidacy for the M.S. (Plan I and Plan II) please contact the Graduate Student Affairs Officer for appointment of a thesis committee (Plan I) and certification of work completed (Plan I and Plan II). Students should consult the Graduate Advisor at least three months prior to the completion of the course of study. Forms must be completed and filed no later than one quarter before the anticipated date for completion of requirements.

Plan IMaster's Plan I. Specific RequirementsThe thesis committee for the Master's Plan I candidate must approve the thesis and may
require an oral examination. The student must arrange the time and place for the oral
exam (if required by the committee). The Master's Plan I candidate must also give the
committee at least one week to read the thesis prior to the exam. [Master's Plan I—see
also (14)].

Plan IIMaster's Plan II. Specific RequirementsThe Master's Plan II candidate must pass a written comprehensive examination. The SYRE
can substitute for the comprehensive exam if the student received a pass/pass.

Ph.D.Students in the Ph.D. program who are in good academic standing and who haveStudentscompleted all other requirements for the Master's Plan II may qualify for the M.S. while
continuing toward the Ph.D.

10. The Doctoral Committee

FunctionTwo doctoral committees are appointed by the Graduate Division. The Qualifying
Committee conducts the Ph.D. Qualifying Examination; the Dissertation CommitteeCommitteessupervises and passes upon the student's dissertation and conducts the Final Oral
Examination. The Qualifying Committee is composed of not fewer than five members,
four of whom are usually from the Chemistry Department and one from a Department
other than Chemistry. One of the Qualifying Committee members will be the student's
dissertation research director. The research director shall not act as chair of the
Qualifying Committee. The Dissertation Committee will consist of the research director,
who will serve as chair, and the two other members of the Qualifying Committee who are
most knowledgeable in the student's research area.

Setting up theThe members of the committees are nominated by the Graduate Advisor in consultationCommitteeswith the Graduate Study Committee and the research director. The student will be
informed of committee members by the Graduate Student Affairs Officer.

11. The Ph.D. Qualifying Examination

SchedulingThe Qualifying Exam must be taken within six months after completion of the other
advancement to candidacy requirements. The actual time of the exam shall be set by the
student in close consultation with the research advisor. If the student does not take the
Qualifying Examination within the period stipulated above, he/she shall submit to the
Graduate Advisor a memo signed by both the student and the research advisor justifying
the delay and providing a revised timetable for the Qualifying Exam. Excessive delays in
taking the Qualifying Exam shall be cause for student dismissal from the Chemistry
Graduate Program. Students should begin planning for and arranging the Qualifying
Examination several months before the intended exam date. See the separate
Procedures for the Oral & Written Qualifying Examinations document for details and
deadlines.

Exam Format

The written examination consists of the preparation of two written research proposals: one on an original research topic unrelated to the student's dissertation research, and one on the student's dissertation research topic. The oral examination consists of the presentation and defense of these two proposals before the Qualifying Exam Committee. **Details regarding the specific requirements, format, and administration of these exams are provided separately in the** *Procedures for the Oral & Written Qualifying Examinations* **document.** Failure to adhere to the procedures described in that document constitutes sufficient grounds for failing the Qualifying Examination.

Evaluation

The dissertation research proposal will be evaluated based on the student's demonstrated understanding of the research area, the ability to explain the research objectives clearly in the context of the field, the research progress to date, and the longer-term research plan. The original research proposal will be judged on the student's ability to select and develop an independent research topic, to explain how the research proposal relates to and will advance the current status of the field, and to provide a plausible strategy for carrying out the research. A critical analysis of the state of the art of the chosen field will also be expected. In both cases, the written document must demonstrate a level of writing ability, scientific knowledge, and creative thought commensurate with a student seeking to earn a Ph.D.

Exam Outcome & Retake Policy

The committee's report on the Oral Qualifying Examination (Form 3) will be prepared by the Graduate Student Affairs Officer. In the event that the student does not pass the qualifying examination on the first attempt, the candidate *may* be allowed one re-examination at a later time. This second examination will ordinarily not be given until three months have elapsed since the first examination, and must be taken within six months of the first attempt. A student whose performance on the second try is also unsatisfactory, or who does not undertake a second examination within six months of the first examination, is subject to academic disqualification. A third examination is not permitted. This and other restrictions on second oral Qualifying Examination are at the discretion of the Qualifying Committee.

If there is an initial divided vote, the committee should first make every effort to arrive at unanimity. Failing unanimity, a committee report which contains only one negative vote will be deemed a pass, and a committee report which contains two (or more) negative votes will be considered a failure.

12. Advancement to Candidacy for the Ph.D.

After the student has passed the Qualifying Examination and has submitted the signed Form 3 to the Graduate Division, he/she will be assessed a \$90 Advancement to Candidacy processing fee.

13. Residence Requirement

The minimum residence requirement for the degree of Doctor of Philosophy is two years (six academic quarters), one year of which must be completed in continuous residence at the UCR campus. For the Master's degree, the minimum academic residence is one year (three academic quarters), of which two quarters must be spent at UCR. A candidate for a higher degree is regarded as a student in residence in regular term only if there is attendance at authorized University exercises amounting to at least four units of upper division and/or graduate work, or, in a six-week Summer Session, to at least two units of similar work, or, in an eight-week Summer Session, to at least the equivalent of four units of work in a regular term.

No graduate student may be recommended for any degree unless at least one year of residence is completed. A student must register during each regular quarter (Fall, Winter, Spring), or else officially request a leave of absence, if a lapse in graduate status is to be avoided. To file during the summer months you must have been enrolled every quarter of the previous academic year. If you were not, *i.e.*, were on leave or withdrawn for one or more quarters, you must either go on Filing Fee status or enroll for two units of directed studies (CHEM 297/299) in Summer Session. If the candidate is able to present a completed draft of the dissertation which has been approved by the Dissertation Committee and Graduate Advisor and if the candidate will make no use of the usual University facilities or continue as a Graduate Student Researcher or Teaching Assistant, a one-time Filing Fee (currently \$162) may be paid *in lieu* of Registration. Details concerning this option may be obtained from the Graduate Advisor.

Full time academic enrollment is ordinarily expected of graduate students at UCR. Full-

Filing Fee in Lieu of Registration time study is defined as enrollment in at least twelve units of graduate academic credit per quarter, sixteen units of undergraduate academic credit, or a combination of undergraduate and graduate courses according to the following table:

0	16
1	15
2	13
3	12
4	11
5	9
6	8
7	7
8	5
9	4
10	3
11	1
12	0

<u>Graduate Units + Undergraduate Units = Full Time</u>

Full-time academic enrollment is required of all graduate students holding Universityadministrated fellowships or academic appointments (TA's, GSR's). Exceptions to the course load limitations policy are not routinely granted, and, if approved, will normally be limited to one quarter of registration.

Since the University of California recognizes the legitimate need for part-time study in special circumstances, the Department of Chemistry will consider applications from students seeking such a status. Half-time students must meet the normal standards of admission, and secure the approval to register for six units or less of course work from the Department. Each student will need to pay full fees to register, but a partial refund will be processed if a half-time petition is filed with Graduate Division. The half-time petition must be submitted to the Graduate Division two weeks before fees are due for optimum timing of the refund, but in no event may the student turn in a petition after the third week of the quarter. Half-time students are not eligible for employment as GSR's or TA's, or to hold University fellowships as determined by the Graduate Council. After advancement to candidacy, all doctoral students will be considered full-time, thus doctoral candidates who are advanced to candidacy are not eligible for half-time status.

14. The Ph.D. Dissertation or M.S. Thesis

The dissertation (thesis) based upon the candidate's research must be approved by the
doctoral or master's committee and must be filed with the Graduate Division. A typed
draft must be submitted to each of the members of the Dissertation Committee at least
one week prior to the time planned for the Final Oral Examination. Before putting the
dissertation or thesis in final form, the student should obtain from the Graduate Division a
set of instructions covering the format, method of reproduction and form of approval
required. The Ph.D. dissertation, in final form and approved by the Dissertation
When FiledWhen FiledCommittee, should be filed with the Graduate Division before or immediately following
the Final Oral Examination. The student is required to upload their dissertation on the
Graduate Division website.

15. The Final Ph.D. Oral Examination

The Final Oral Examination of a doctoral candidate is conducted by the student's Dissertation Committee.

- The FormatThe format of the final oral will include a formal seminar presentation of the dissertation
research by the candidate. This presentation should generally be one hour long and
should be carefully prepared. The candidate is expected to give satisfactory responses to
questions by the Dissertation Committee. The Dissertation Seminar will be open to other
students and faculty and those persons may ask questions at the discretion of the
Dissertation Committee.ParticipationDissertation Committee.
- CommitteeAfter the formal seminar presentation, the Dissertation Committee will meet in closedDeliberationsession. The candidate may be requested to meet with the Committee in this session to
answer additional questions and to discuss modifications of the dissertation. The
Committee will notify the candidate concerning the results of the examination
immediately after deliberations are concluded.
- *Scheduling* The responsibility for scheduling the final oral rests with the candidate. If possible, the presentation should be given in the appropriate subdiscipline seminar (CHEM 251–254).
- NoticesThe candidate should notify the Graduate Student Affairs Officer concerning the
examination, time, date and room number, and should arrange to have a formal notice
(with a short, one-page abstract of the dissertation research) posted and distributed (by
email) to faculty, visiting scholars and graduate students at least one week prior to the
examination.
- Form 5The Committee makes its report on Form 5, which will be prepared by the Graduate
Student Affairs Officer. The original is filed with the Graduate Division and a copy will be
retained by the Graduate Student Affairs Officer after all arrangements for departmental
clearance have been made as in Section (16) below with the departmental Financial
Operations Manager.

16. Final Clearance for Graduate Degrees

Before the Department of Chemistry will give final approval to the Office of the Registrar for the formal granting of the M.S. or Ph.D. degree, the following clearances must be obtained and certified to the departmental Financial Operations Manager:

- A. Clearance of stockroom account, including payment of any bills for breakage, missing equipment or excessive use of chemicals and solvents.
- B. Clearance from the dissertation advisor certifying that equipment, books and all research notebooks have been returned, and that one copy of the thesis, dissertation or final report, has been deposited with the dissertation advisor.
- C. Clearance from the Physical Sciences Librarian certifying that all borrowed keys or books are returned.

- D. Clearance from the Departmental Analyst certifying that keys which the student has checked out are returned.
- E. Completion of an exit interview with the Chair of the Chemistry Department.

17. Transfer of Coursework from Other Institutions

Though ordinarily all of the work for a graduate degree is expected to be done while in residence at UC Riverside, up to eight units (or two courses which total eight units or less) of credit for work taken at non-UC campuses may be allowed, and credit for graduate work completed at other UC campuses may be granted in excess of eight units. Up to onehalf of the units required for a Master's degree may be transferred from another UC campus as well. However, none of these units can be used to reduce the minimum residency requirement or the minimum unit requirement for the Master's Plan II program. Also, the referred units must have been taken under graduate status in an institution of recognized standing and only courses in which a grade of "B" or better was received can be transferred. Petitions for transferring credit will be considered only when the work is necessary to fulfill degree requirements. The student should submit a "Graduate Student General Petition," marked "transfer units," along with an official transcript of the work completed sent directly to the Graduate Division. The total number of units which a student will be allowed to transfer into his/her graduate record at UC Riverside from other institutions can represent no more than one-half of the number of units needed for the graduate degree.

In exceptional cases graduate classes taken at other institutions can be used to substitute one or more of the classes required in the course work for the Ph.D. and Master's Plan I programs described in Section 2. Again, the referred classes must have been taken under graduate status in an institution of recognized standing, and only courses in which a grade of "B" or better was received can be used for this purpose. In addition, the student will need to prove the equivalence of the pair of classes (the non-UCR *vs.* the UCR class) being considered. Final approval of these substitutions will be made by the Graduate Advisor in consultation with the Graduate Studies Committee.

18. Unsatisfactory Progress and Academic Disqualification

Graduate Division regulations stipulate that a graduate student is considered to be making unsatisfactory progress towards his/her graduate degree if he/she:

- A. Maintains a cumulative grade point average below 3.0 for one quarter or obtains a quarterly grade point average below 3.0 in two successive quarters;
- B. Fails to complete required courses successfully and/or pass the appropriate examinations within the periods specified by the graduate program;
- C. Fails to pass a required examination (the Qualifying or the Final Thesis exams) in two attempts;
- D. Fails to make adequate progress towards the completion of the thesis or dissertation in a timely manner;
- E. Fails to pass the Qualifying Exam within five years (note that the requirements in the Chemistry program are more stringent, see Section 11);
- F. Fails to complete the program within one year after reaching normative time; or
- G. Accumulates twelve or more outstanding units of "I" grades.

Unsatisfactory academic progress may be determined on the basis of explicit requirements, or based on the professional judgment of the faculty upon review of all graduate work undertaken at UCR. Persistent unsatisfactory progress may lead to disqualification.

19. Academic Integrity

Graduate students in Chemistry are expected to maintain the highest standards of academic integrity in their coursework, examinations, and research. Cheating in classes or exams, fabricating data, plagiarizing, facilitating academic dishonesty, collaborating with others on assignments without authorization, interfering with or sabatoging the work of others, or failure to comply with research regulations (such as those applying to human subjects, laboratory animals, or laboratory safety), or retaliation against a person who reports academic misconduct are all considered academic misconduct. Additional examples and definitions of misconduct may be found at http://graduate.ucr.edu:/academic_integrity.html

Academic misconduct will not be tolerated in the Chemistry graduate program. Students who engage in academic misconduct in a course or examination will receive a failing grade for that assignment/exam/course, at the discretion of the instructor, the thesis committee, and/or the Graduate Advisor. Such failures may constitute unsatisfactory progress toward the degree and may result in the student's dismissal from the program. Academic misconduct in research will result in the student's dismissal from the research group and/or the graduate program, at the discretion of the thesis advisor and/or the Graduate Advisor.