REGULATIONS REGARDING ADVANCED
DEGREES IN THE
CHEMISTRY DEPARTMENT
AT SYRACUSE UNIVERSITY

Master of Science, Non-Thesis Option
Master of Science, Thesis Option
Doctor of Philosophy

This is a supplement to the information contained in the Graduate
Catalogue and Academic Rules and Regulations, which are parts of the
Syracuse University bulletin series.

August, 2014
Summary of Requirements for **Master of Science, Non-Thesis Option**

1. Breadth Examinations: pass in two of the four areas.
2. Course Load: 18 graduate credits in first two semesters
3. Course Work: 30 graduate credits, at least half in courses numbered 600 or above
4. Grade Point Average: 3.00 prior to graduation
5. Culminating Experience: literature study, public seminar, comprehensive examination based on coursework, or paper to be submitted for publication

*Details on these items are found below*

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Summary of Requirements for **Master of Science, Thesis Option**

1. Breadth Examinations: pass in two of the four areas.
2. Course Load: 18 graduate credits in first two semesters
3. Course Work: 30 graduate credits, at least half in courses numbered 600 or above
4. Grade Point Average: 2.80 after 2\textsuperscript{nd} & 4\textsuperscript{th} semesters and for first 30 graduate credits, 3.00 prior to graduation
5. Thesis: approved by preceptor and second reader before preparation of final copy
6. Oral Examination: on thesis (based on final copy) and related topics
7. Seminar: may be combined with thesis oral examination

*Details on these items are found below*
Summary of Requirements for Master of Philosophy

1. Breadth Examinations: pass in three of the four areas.
2. Course Load: 18 graduate credits in first two semesters
3. Course Work: 48 graduate credits, at least two-thirds in courses numbered 600 or above
4. Grade Point Average: 2.80 after 2nd & 4th semesters and for first 30 graduate credits, 3.00 prior to graduation
5. First Year Report: submitted at the end of the first year of study
6. Research Proposal: formal, written proposal to student’s doctoral committee
7. Second-Year Oral Examination: on research proposal and on student’s research

Details on these items are found below

N. B. This degree, an option for students who plan to complete the requirements for the Ph. D., may be applied for soon after admission to candidacy for the Ph. D., i.e. after passing the Second-Year Oral Examination.
Summary of Requirements for **Doctor of Philosophy**

1. Breadth Examinations: pass in three of the four areas
2. Course Load: 36 graduate credits in first four semesters
3. At least 15 graduate credits (excluding CHE 638/690/990/997/999) should be completed by the end of the 2\textsuperscript{nd} semester
4. At least 18 graduate credits (excluding CHE 638/690/990/997/999) should be completed by the end of the 4\textsuperscript{th} semester
5. Course Work: 48 graduate credits, at least two-thirds in courses numbered 600 or above
6. Grade Point Average: 3.00 after 2\textsuperscript{nd} & 4\textsuperscript{th} semesters, 3.00 prior to graduation (grades from CHE 638/690/990/997/999 are not counted in the GPA for this requirement)
7. First Year Report: submitted at the end of the first year of study
8. Research Proposal: formal, written proposal to student’s doctoral committee
9. Second-Year Oral Examination: on research proposal and on student’s research
10. Publication requirement: publish research results in peer-reviewed scientific journals.
11. Dissertation: approved by preceptor and second reader
   before preparation of final copy
12. Oral Examination: on thesis (based on final copy) and related topics
13. Seminar: may be combined with thesis oral examination

*Details on these items are found below*
**Breadth Examinations**

Every student must demonstrate a certain level of competence in fields of chemistry other than the one in which advanced study and research are carried out. To this end, the Department gives breadth examinations in four areas: inorganic chemistry, organic chemistry, physical chemistry, and biochemistry. All Ph.D, candidates must pass examinations in three of the four areas, and all M.S. candidates must pass examinations in two of the four.

The examinations cover essentially undergraduate material, and are scheduled at three times during the academic year: (1) during the week prior to the beginning of the fall semester; (2) during the week prior to the beginning of the spring semester; and (3) during the week after final examinations of the spring semester. Students may take examinations in all four areas if they wish. Each student must take these examinations during the week prior to his/her first semester in residence, and has three opportunities to satisfy the examination requirements. Thus, the breadth examination requirement must be satisfied within the first year of residence.

Exceptions to this requirement may be made, by prior arrangement, for students with deficiencies in their undergraduate background. Also, a first-year student who completes two semesters of graduate course work with a grade-point average of 3.15 or better, but passes only two out of the three required breadth examinations in three attempts, may petition to take a fourth examination in the area of deficiency. Such a petition must include plans for remedial study.

The responsibility of recognizing deficiencies and of taking remedial action lies with the student, although the faculty will advise incoming students on the basis of transcripts and results of the first breadth examination. Note that several courses are particularly useful to students having difficulty with their breadth examinations.
Course and Grade-Point Requirements

The Chemistry Department's regulations, regarding course and credit requirements, conform to the Graduate School's requirements as specified in the Syracuse University Bulletin, Academic Rules and Regulations.

The minimum course load for full-time students in the first two semesters is eighteen hours of graduate work. This includes graduate courses in chemistry, and approved courses in other departments. Each first-semester student will be urged to take courses in several areas of chemistry.

First-year students must obtain approval from the graduate advisor to take courses outside the Chemistry Department. This must be done prior to registration. An exception is made for BIO 575, Biochemistry.

Students in the M.S. Non-Thesis Option program are required to earn a minimum of 30 graduate course credits, of which at least half are numbered 600 and above. They must achieve a 3.00 average for these course credits prior to graduation. Students in the M.S. Thesis Option program must earn a minimum of 30 graduate course credits, and achieve a minimum grade-point average of 3.00 in all courses for the first 30 credits of graduate study. In addition, these students must have at least a 2.80 average in all graduate courses after their second and fourth semesters in residence.

Students in the Ph.D. program must earn a minimum of 48 graduate course credits, of which at least two-thirds are numbered 600 and above. At least 18 credits must be in courses excluding CHE 638, 690, 990, 997 and 999. At least 15 credits of courses excluding CHE 638, 690, 990, 997 and 999 must be taken in the first two semesters. Students in the Ph.D. program must achieve a minimum grade-point average of 3.00 for all graduate courses presented for the degree. In addition, these students must have at least a 3.00 average in all graduate courses after the second and fourth semesters. The grade-point average used for the above requirements is calculated excluding all grades from CHE 638, 690, 990, 997 and 999. Failure to maintain a grade-point average of 3.00 at the afore-mentioned times will result in a transfer to the M.S. program.
Any exceptions to these requirements must be approved by petition to the Department. Graduate course credits transferred from another institution may not exceed the number of graduate course credits earned at Syracuse University.

Selection of Preceptor

Graduate students pursuing a degree with a thesis should select a research preceptor by the end of their first year in residence. They are encouraged to make their choice by the end of their first semester in residence. Students wishing to receive a graduate degree in chemistry must choose a preceptor with a primary appointment in the Department of Chemistry.

To acquaint new graduate students with the research opportunities available in the Department, a series of research talks is given by the faculty during the first semester of each academic year. (Sometimes, another department function is organized to introduce students to faculty research programs.) All first-year students are required to attend. Students unable to attend may be excused by petitioning the Department; if the petition is approved, they are responsible for visiting professors in the Department on their own.

After the faculty seminars are completed, students are encouraged to visit with individual faculty and discuss their intention to join a research group. After making a selection of preceptor(s), each student should complete a form and submit it to the department chairman, who will confer with the designated faculty member(s). If the selection is approved, the chairman will confirm the assignment in writing.

Committee System

After the student's research preceptor has been selected, the Department will appoint a three-member supervisory committee. The main purpose of the committee is to monitor the student's progress, primarily in research, toward the degree. The preceptor shall be a member of the committee. The committee chair, who shall not be the preceptor, is responsible for organizing meetings of the committee and for maintaining the flow of information and opinions regarding the student.
The duties of the committee include administration of a second year oral examination and administration of the final oral examination on the thesis. Committee members are expected to remain familiar with the student's research, and to meet frequently, formally or informally, to discuss research progress and other degree requirements.

If a member of the committee feels that insufficient progress is being made, or that the student's performance is below Department standards, the student should be so informed in writing. If no improvement is forthcoming, the committee should meet for discussion of the problem and to make recommendations.

First Year Report

On the first Tuesday of September of his/her second year, each student will turn in a progress report to be evaluated by his or her committee. This report should include a discussion of the background and importance of his or her project, progress made on the project to date, and avenues that will be pursued in the future. A detailed experimental section should be included. The experimental section should be developed in close consultation with the student’s research advisor. The body of the report should be no longer than 1500 words (double-spaced, 12-point type), excluding abstract, figures, references, experimental details and other supplementary materials. Titles should be included with literature citations.

These reports will be graded pass, pass with reservation, or fail by the student’s committee. A pass implies that satisfactory research progress has been made and the report was well-written. A pass with reservation must be upgraded to a pass by rewriting the report to the satisfaction of the students committee; otherwise the result of the report will be downgraded to Fail. A result of failure implies that unsatisfactory effort has been made. Students who fail the First Year Report must prepare a second report to be given to their committee the second Tuesday of the following January. This second report will be of the same format and graded the same as the first year report, but if a Fail is given the student shall be immediately transferred to the M.S. program.

Students should be notified of their performance by their committee chair in writing within two weeks of handing in the report. Reports not turned in or turned in late, without
written excuse of illness or emergency, may be considered the same as a Fail at the discretion of the committee.

**Language Requirement**

There is no formal language requirement. However, students are encouraged to develop basic skills in all foreign languages that are important to the literature of their research area.

**Admission to Candidacy and Second-Year Oral Exam**

During the second year, each student will have his/her status reviewed by the supervisory committee, which will administer the second-year oral exam. The oral examination will be scheduled by the department and will take place during the spring semester (usually in the month of April). The date of the second-year oral examination will be supplied to the student in writing at least one month prior to the examination. Failure to appear at the scheduled time, without written excuse of illness or other emergency, shall result in transfer to the M.S. program.

Prior to the second-year oral, the committee shall meet without the student to discuss the student’s strengths and deficiencies, overall performance and prospects that he or she will be a successful candidate for a Ph. D. Earlier meeting of the committee can be called at the request of the student’s preceptor.

Following the second-year oral exam, the supervisory committee will make a recommendation as to whether the student is qualified to continue toward a Ph. D. degree. The decision will be based on the student’s total performance, including breadth examinations, first-year report, coursework, research proposal (see below), research report (see below) and research proficiency. Research proficiency, evaluated at the second-year oral examination includes the student’s familiarity with the research literature, understanding of his or her research problem, accomplishments up to the time of the examination, and competency in required research tools, including writing and speaking ability.
As a basis for understanding research proficiency, the student should prepare a formal, written research progress report that includes the student’s research accomplishments to date and his/her research goals. The student must also prepare and defend a research proposal on a subject not closely related to his/her research (for details on these reports, see the next section). Both of these reports should be submitted to the supervisory committee at least one week before the examination.

If all aspects of the student’s performance are found to be satisfactory, and the committee considers the student qualified to continue to the Ph. D., the committee will recommend admission to candidacy (and, where appropriate, awarding of the M. Phil. degree). The committee should be prepared to make a decision concerning continuation to the Ph. D. degree immediately after the oral examination (unless there are extenuating circumstances), but, in any case, not later than one week after the examination.

The chairman of the committee should promptly communicate to the student the committee’s recommendation in writing together with any recommendation for further remedial work by the student. A copy of the letter to the student should be given to the Graduate Affairs Committee in order to be submitted to the faculty of the Department for final approval. Normally, the Graduate Studies Committee will concur with the supervisory committee, but it may make modifying or, countermanding alternative recommendations when it feels they are necessary. Copies of all letters to the student should be given to the Graduate Advisor, department chairman, and student record keeper to be included in the student’s records.

**Research Progress Report Requirements**

Graduate students will be required to submit a formal, written progress report on his/her research project to his/her supervisory committee. The student will be examined on this report during his/her second-year oral examination.

The report should begin with an abstract, not to exceed 250 words, which presents the rationale of the research, its scientific objective, and an estimate of the significance to the field of research if the objective is reached. The body of the narrative may not exceed 1700 words,
double-spaced, in at least 12-point type, excluding abstract, figures, references, experimental
details and other supplementary materials. The narrative should expand on the abstract and
include background of the project, a description of research progress, its significance, and
future goals. Pertinent literature citations, with titles, should be included.

The abstract of the research report must be circulated to the entire faculty two weeks
before the examination. The complete report must be submitted to the supervisory committee
one week before the second-year oral examination is to take place.

Research Proposal Requirements

Each doctoral student will be required to submit a formal, written research proposal to
his/her supervisory committee. The student will be examined on this proposal during his/her
second-year oral examination. The proposal cannot be in an area directly related to the
student’s own doctoral research. The topic of the research proposal should be approved by the
head of the student’s committee at least one month before the abstract is distributed to the
faculty.

The proposal should begin with an abstract, not to exceed 250 words, which presents
the rationale of the research, its scientific objective, and an estimate of the significance to the
field of research if the objective is reached. The body of the narrative may not exceed 1700
words, double-spaced, in at least 12-point type, excluding abstract, figures, and references. The
narrative should expand on the abstract and include a description of the proposed research, its
significance, and a general plan of procedure. Pertinent literature citations, with titles, should
be included.

The abstract of the proposal must be circulated to the entire faculty two weeks before
the examination. The complete proposal must be submitted to the supervisory committee one
week before the second-year oral examination is to take place.
**Annual Research Reports**

Each student whose degree contains a significant research component will be responsible for keeping his/her supervisory committee informed of his/her research progress by providing a yearly progress report. This report should be provided to all members of the chemistry faculty the first Tuesday in April each year until successful completion of the degree. An exception will be made for a student who is in the process of writing his/her thesis, with the report not being required as long as the thesis is to be defended within two months of the first Tuesday in April.

The report should begin with an abstract, not to exceed one page, which presents the rationale of the research, its scientific objective, and an estimate of the significance to the field of research if the objective is reached. The body of the narrative has no page limit, but must be in 12-point type. The narrative should expand on the abstract and include background of the project, a description of research progress, its significance, and future goals. Pertinent literature citations and a detailed experimental section should also be included. The experimental section should be developed in close consultation with the student’s research advisor.

Within one month of receiving these reports the faculty will meet to discuss the progress of all doctoral candidates. These reports will be graded satisfactory or unsatisfactory. Two consecutive unsatisfactory progress reports may result in the transfer of the student to the M.S. program, at the discretion of the faculty. The decision on each report should be communicated to each student in writing within one week of the faculty’s decision.

**Ph.D. Publication Requirement**

To receive the Ph.D. degree, students are required to publish their research results in peer-reviewed scientific journals. Doctoral candidates may request a date for their dissertation defense only after the candidate has been listed as an author on at least one peer-reviewed research journal article that is published, in press, or accepted by the editorial staff. The peer-reviewed research article must be related to their doctoral studies and the journal must be indexed in Chemical Abstracts, MEDLINE, Web of Knowledge or PubMed. For non first
authored publications, the research advisor must furnish a written statement to the doctoral committee explicitly describing and verifying the student’s major role in the work. Manuscripts that are “in preparation” or “submitted” do not meet the criteria, nor do narrative literature reviews. Book chapters are unacceptable. This publication requirement is a strict condition for graduation and will not be waived.

**M.S. Thesis and Ph.D. Dissertation**

When the M.S. thesis or Ph.D. dissertation is complete to the satisfaction of the student's preceptor, and before the final copy is prepared, the thesis must be read by at least one reader other than the preceptor. This reader will usually be that member of the student's committee most qualified by research experience to offer constructive criticism of the thesis contents and presentation. With the approval of the committee, a reader outside the committee or outside the Department may be chosen if the person is especially qualified in the research area. Ample time (at least two weeks) should be allowed the additional reader(s), who may suggest revision of the manuscript before the final version is printed.

Three weeks before the oral exam, the student should make an appointment to confer with his or her graduate recorder in the Graduate School office to: (1) ensure that the student's file is in order, (2) obtain approval of the thesis or dissertation format, and (3) submit an Appointment of Examining Committee form allowing the Graduate School one week to search for a chair of the oral examination.

The student should keep in mind the Graduate School rules requiring that the thesis, in its final version, be presented to the Graduate School and to the members of the committee administering the thesis defense two weeks in advance of the oral examination. It is the Chemistry Department’s intent to adhere strictly to these requirements except in cases of demonstrably extreme hardship. The student has the responsibility of making appropriate arrangements accordingly.

The examining committee for the Ph. D. thesis must have six members, including the committee chair, who must be from outside the Chemistry Department, and the preceptor. Normally, it is composed of the three members of the candidate's supervisory committee,
augmented by two other Chemistry faculty members and the chair. Deviations from this must be approved by the Graduate Advisor.

_Seminar_

One seminar is required of all Ph. D. and M. S. (thesis option) candidates. The seminar is considered as a report to the Department on the research accomplished by the student. Given near the end of the student’s graduate career, the seminar is usually combined with the final (thesis) oral examination.

**Non-Thesis Option for the M.S. Degree**

Four areas of concentration will be available: organic chemistry, physical chemistry, inorganic chemistry, and biochemistry. The requirements for the non-thesis option M.S. degree will be 30 hours of graduate course credits. No more than half of these can be at the 500 level. The emphasis of the degree will be on gaining a comprehensive exposure to graduate chemistry courses. Students will be encouraged to take at least one course in each of the four areas of the department.

In place of the M. S. thesis, a culminating experience will be required. This may consist of a library study of the literature, a comprehensive examination based on the coursework taken by the student, a research paper written by the student, or a seminar presented by the student.

_Time for Completion of Degree Requirements_

A candidate for the doctorate must complete his/her dissertation within five years after passing the second-year oral examination. If he/she fails to do so, and subsequently wishes to complete the doctorate, the second-year oral examination must be repeated, unless the candidate successfully petitions the Graduate School. Master’s degree candidates must complete all requirements for the degree within seven years of their first course registration.
Graduate students who leave the department must complete degree requirements within two years of leaving the department. This includes submission and defense of the thesis or dissertation.

MODIFICATIONS

The faculty of the Department may modify these regulations in such a manner as to meet the needs of the students enrolled in interdisciplinary programs including primary concentrations in Chemistry, or in other unusual situations.

The faculty may also impose additional requirements for any degree under its jurisdiction, if in its judgment it is so warranted.