# Contents

1.00 Admission and Orientation  
2.00 Assistantships and Fellowships  
3.00 Chosen Concentration  
4.00 Courses  
5.00 Cumulative Exams  
6.00 Qualifying for Degree Applicancy  
7.00 Research  
8.00 Seminars  
9.00 Admission to Degree Candidacy  
10.00 Master of Science Degree  
11.00 Doctor of Philosophy Degree  
12.00 Forms & Thesis/Dissertation Preparation  
13.00 Guidelines for Literature Seminar Preparation and Presentation
The faculty, staff, research associates, and continuing graduate students of the Department of Chemistry welcome you as a UNO graduate student. We would like you to know we recognize that the quality of our graduate programs intimately depends on the work of our graduate students in both research and teaching. You will find, therefore, that a close working association between students and faculty is encouraged. To this end, we urge you to feel free to drop in to discuss with any of us any aspect of your work.

This guide is an attempt to present an account of the formal aspects of graduate work. Please examine it carefully. It should be retained until you have completed your graduate work at the University of New Orleans, for it is designed to supply answers to most of your questions about graduate progress. We are pleased to have you with us, and we wish you the best of success in your work.
1.00 Admission and Orientation

1.01 The principal requirements for admission are evidence of good scholarship and completion of an undergraduate program of study in chemistry or a related field.

1.02 Admission. All applications must be formally approved by the Dean of the Graduate School upon the recommendation of the Department of Chemistry. Awarding of financial assistance (see Assistantships and Fellowships, Section 2.00) also must be validated by the Graduate School after recommendation by the Department. A normal admission is granted when the Graduate School has all of the required application materials and has determined that they meet or exceed the minimum acceptable standards. Some students whose application materials are complete but do not meet or exceed the minimum acceptable standards may be given a probational admission. Such an admission usually carries special restrictions with regard to academic performance during the first semester or two. Students whose application materials were submitted too late to be fully evaluated or are incomplete may be given a provisional admission for the first semester. The provisional status must be removed by the end of the first semester or the student will be dropped from the Graduate School. For further information about the Graduate School at UNO, please visit its website at: http://www.grad.uno.edu/

1.03 Undergraduate Preparation. For work leading to an advanced degree, the preferred minimum experience is:

1. Two semesters of general chemistry
2. Two semesters of organic chemistry
3. Two semesters of physical chemistry
4. Two semesters of analytical chemistry which should include instrumental analysis
5. Ten semester hours of chemistry laboratory
6. One semester of inorganic chemistry
7. One or more advanced chemistry courses equivalent to at least five semester hours
8. Mathematics through calculus
9. Two semesters of college physics
10. Elective courses in the humanities and social sciences.
Promising students who have not completed the courses desired for unqualified admission may be accepted for graduate work, but they will be required to complete their undergraduate preparation.

1.04 Placement Examinations. All entering graduate students are required to take at least four placement examinations from the following: analytical, biological, inorganic, organic, and physical chemistry immediately prior to their initial registration (Section 1.06). The results of these examinations aid the department in evaluating the student's knowledge of material normally covered in a modern undergraduate program. Recommendations for an initial course of study, based on the student's placement exam performance, are made by the Graduate Affairs Committee (Section 1.07), which considers them in consultation with the student in light of the student's previous academic record to arrive at the proper course placements.

1.05 Transfer Credit. Students who have earned graduate credit at another university may request up to 12 hours of transfer credit. The request is made of the division to which the course material relates. The division may consider the student’s placement examination before making a decision.

1.06 Deficiencies in Undergraduate Preparation. Students who are pursuing advanced degrees in chemistry are expected to have an undergraduate training equivalent to that of an American Chemical Society certified undergraduate degree (Section 1.03). Entering students must demonstrate an undergraduate proficiency in at least three areas of chemistry, which must include their area of research concentration (if a placement exam exists for that area), and physical chemistry. A satisfactory score on a placement exam will qualify as demonstrating proficiency in the area of the exam. If a student fails to demonstrate proficiency in at least three areas on the placement exams, including their area of research specialization (if a placement exam exists) and physical chemistry, then proficiency may be demonstrated by one of the following methods:

a. A student may demonstrate proficiency by enrolling in an appropriate undergraduate course in that area, and receiving a final grade of A, B, or C in the course. For proficiency in physical chemistry, a student must obtain a grade of A or B in one of the three undergraduate courses offered by UNO (CHEM 3310, 4310, and 4311). Graduate students enrolled in undergraduate chemistry courses, including 4000-level courses, required for the B.S. degree in Chemistry at UNO will receive grades, but these courses may not be used for degree credit, and these grades will not be used in computing the student's average unless they are F's. A grade of D or F does not demonstrate proficiency and will have serious bearing on the question of retention.

b. If a student fails to demonstrate proficiency on the placement exam in an area, but has previously taken an undergraduate course in that area, then depending on the score on the placement exam, a student may be allowed to enroll in a graduate course in that area. If no placement exam exists in an
area, or no appropriate undergraduate course exists at UNO, a student will also be allowed to enroll in the graduate course. A grade of A or B in the graduate course will demonstrate proficiency in that area. If a student receives a grade of C, then the course instructor will make a determination of whether the student’s mastery of the material is sufficient to demonstrate proficiency in the area. A grade of D or F does not demonstrate proficiency and will have serious bearing on the question of retention.

c. A student whose placement examination reveals a deficiency in a particular area and who has satisfactorily completed appropriate undergraduate course work at another suitable institution, may petition the Graduate Affairs Committee for permission to repeat the placement examination. The committee must obtain the approval of the division involved before granting such permission.

1.07 **Initial Graduate Advisor.** Prior to the time a graduate student enters into a research arrangement with a faculty member, which is done at the end of the first semester (Sections 7.02 and 7.03), he will be advised on all aspects of his program by the Graduate Affairs Committee. This committee is responsible for guidance in course placement, maintenance of records, and supervision of individual progress.

1.08 **Grades.** With the exception of thesis and dissertation courses, letter grades of A, B, C, D or F are awarded for courses. No graduate credit is given for grades of D and F. A grade of C in a graduate course is generally viewed as unsatisfactory, and it results in a formal faculty review and recommendation. A student must have at least a 2.5 average each semester to remain in good standing with the Graduate School. Failure to attain this minimum may result in the Department withdrawing financial support, or termination from the program. A graduate degree is not awarded to students whose overall average is less than 3.0.

1.09 **Academic Standing and Continued Financial Support.** The principal criterion used in evaluating a beginning graduate student's progress is performance in course work. The Department uses the student's performance in all courses in reaching decisions concerning academic standing and continued financial support. Continuing students are evaluated on performance in course work as well as research progress, performance of assigned teaching and grading duties, seminar attendance, and completion of degree requirements in a timely fashion.
2.00 Assistantships and Fellowships

2.01 Most graduate students are granted financial support in the form of a teaching assistantship, research assistantship, or special fellowship. Teaching and Research Assistants are special kinds of student employees with certain responsibilities and privileges that are established by the Department and the College of Sciences. Graduate assistants must be enrolled at UNO during the tenure of their assistantships but may not carry more than 10 hours of course credit per semester.

The UNO College of Sciences policy with regard to outside employment is as follows:

"Assistants are not allowed to accept additional employment for pay during their tenure as assistants. Such employment without the written approval of the College of Sciences shall be grounds for terminating the assistantship. Special permission to accept outside work for pay or additional duties in the University for extra compensation may be given by the Dean of the College of Sciences, but only if the request: (1) is approved by the department chairman and (2) is accompanied by evidence that the assistant's academic work and the quality of his service to the department will not be affected adversely. Continued and significant approval of outside employment calls into question whether the authorization of such assistantships to the department is justified."

Any student taking a semester or more leave from UNO must apply for an assistantship upon return and will be considered among the new applicants.

2.02 Teaching Assistantships. Students wishing to apply for a teaching assistantship should write to the chairman of the Graduate Selections Committee of the Chemistry Department. A teaching assistantship pays the major cost of a student's education and also provides leadership experience and training in the fundamentals of chemistry. The teaching experience is especially valuable for those students who eventually will seek academic appointments. Many students hold full-time teaching assistantships during their first and second years and then, having demonstrated their ability to carry out research, are transferred to research assistantships. Some students prefer to continue as full-time Teaching Assistants.

Full-time teaching assistantships are intended as support so that students may actively pursue their research goals and finish their course work. Students are expected to spend a minimum of 40 hours per week in teaching, research and courses to retain that assistantship.

Students admitted to the graduate program in chemistry without a bachelors degree in chemistry will not be considered for assistantship support, unless an exception is approved by the department, until items 1-5 in section 1.03 are completed.
2.03 **Research Assistantships.** Research assistantships are awarded on the recommendation of the faculty research advisor responsible for the funds involved, or by the Chairman if Department funds are involved. Recommendations are based on good academic standing, experience, interest in the research problem, and availability of funds. Research Assistants are expected to devote an average of at least 40 hours per week to research. Research Assistants work on their own thesis or dissertation research under the direction of their faculty research advisor.

2.04 **Fellowships.** Qualified students may receive fellowships (industrial, government, or private) for which the recipient may be elected or must make an application. The department is glad to assist qualified persons in obtaining fellowships. Fellowship holders are paid at the rate specified by the specific fellowships. Where appropriate, the stipend is supplemented by the Department to achieve equity with the other sources of graduate student support. The supplement may require the fellowship holder to do a small amount of laboratory teaching or grading.

2.05 **Appointments.** Graduate Assistants are appointed on a fiscal year basis. After an assistantship or fellowship has been awarded, the Department will make every reasonable effort to maintain some form of financial assistance. Masters candidates will be maintained for up to three years and Ph.D. candidates will be maintained for up to five years provided the student remains in good standing. M.S. students are not routinely supported for a fourth year and Ph.D. students are not routinely supported for a sixth year, but in some cases an extension may be granted. A written request must be made by the student to his or her research committee who will make a recommendation to the Faculty. Before submitting the request, students must have obtained Candidacy (Section 9). Under no circumstances can a M.S. student be supported beyond the fourth year or a Ph.D. student be supported beyond the sixth year.

2.06 **Graduate Student Absences.** The current university policy is that all graduate students regardless of support (TA or RA) are not allowed time off with pay during the normal academic sessions (Fall, Spring and Summer Semesters). Any student that is absent for an extended period must be taken off the payroll if that absence occurs during normal academic sessions as well as periods between semesters when the university is open. These terms of employment do not apply when the university is closed for holidays or due to storm events.

TAs must be present during all academic sessions (Fall, Spring and Summer Semesters).

Graduate students who miss short periods must make up missed hours. Students who are absent for more than five consecutive business days will be removed from the payroll; reinstatement will be contingent upon complete return to normal duties.

These guidelines do not apply to periods of travel directly related to the TA or RA position, such as conferences or training.
3.00 Chosen Concentration (MS and Ph.D. Degree)

3.01 The chosen concentration, or area of interest, is one of the most important decisions that graduate students must make. Students can choose between one of the six divisions: analytical, biological, inorganic, materials, organic or physical. The choice dictates many aspects of the student’s ultimate curriculum. These are discussed below.

3.02 Class Structure. The majority of graduate classes taken by a student (Section 4) must lie within his or her chosen concentration.

3.03 Cummulative Exams (Ph.D. only). Students who wish to be considered for Ph.D. degree applicancy (Section 6) must pass a series of cumulative exams in their chosen field of interest. These exams are discussed further in Section 5.

3.04 Selection of a Research Advisor. The majority of students opt to undertake research with an advisor from the same division as their chosen concentration (Section 7). However, chemistry is by nature an interdisciplinary endeavor. Hence, a student’s concentration need not be the same as the division of their chosen advisor. For example, a student wishing to concentrate in analytical chemistry may elect to join the research group of an advisor from the organic division. Under such circumstances, the student and the chosen advisor must write a short (one page) report outlining the specific program of research that the student intends to undertake. This report must be approved by both the division of the student and the division of the selected advisor before the student can formally join the research group.

3.05 Advisory Committee. After a student has selected an advisor, this committee acts in an advisory capacity to the student and is charged with the responsibility of aiding the student in his/her course program, following and reviewing the student’s general progress, and finally judging the acceptability of the student’s thesis or dissertation (Section 7). The advisor becomes the head of this committee. Regardless of whether the student and advisor are in the same division, the bulk of the committee is composed of faculty from the same division and that of the student.
4.00 Classes (MS and Ph.D. Degree)

4.01 Entering graduate students are carefully evaluated during their first year of study as to their potential for continued graduate work. The principal area of evaluation is course work.

4.02 **Definition of graduate level classes.** The University defines any course at the 4000G and 6000 level to be ‘Graduate level’.

4.03 **General Course Requirements (MS and Ph.D).** Students are required to take graduate classes (defined as 4000G and 6000 level classes) in at least three divisions (from analytical, biological, inorganic, materials, medicinal organic, and physical chemistry). Students must take a minimum of six courses (18 hours), with at least three in one division constituting a ‘concentration’. With department approval, those outside the concentration can be non-chemistry courses. The precise nature of a student’s courses depends on both his/her interests and his/her placement exam results. As discussed in Section 1.08, students must obtain a minimum cumulative grade point average of 3.0.

4.04 **Physical Chemistry Undergraduate Proficiency (MS and Ph.D.).** Physical chemistry plays a central role in the chemical sciences. Consequently, regardless of their concentration, all students are required to sit a physical placement exam and demonstrate undergraduate proficiency. Students who pass the placement exam (Section 1.06) may opt not to take any graduate classes in physical chemistry. However, students who obtain an unsatisfactory grade must successfully pass at least one graduate level course in physical chemistry. Only a grade of B or higher is considered an unqualified, satisfactory performance. If a student receives a grade of C, then the course instructor will make a determination of whether the student’s mastery of the material is sufficient to demonstrate undergraduate proficiency.

4.05 **Declared Concentration (MS and Ph.D.).** Students must receive an ‘A’ or ‘B’ grade in courses in their concentration. Any other grade may not be used for chemistry graduate degree credit. In addition, if the student obtains a grade of ‘C’ or lower, he/she must retake the course and obtain a satisfactory grade. Under special circumstances, e.g., with courses that are offered infrequently, the failed course may be replaced with another course in the student’s concentration. Students who wish to do this must petition their respective division.
5.00 Cumulative Exams (Ph.D. only)

5.00 Students who wish to be considered for Ph.D. degree applicancy (Section 6 are required to take a series of cumulative examinations (cumes) in their concentration area. These examinations test the student’s ability to apply their knowledge to a critical evaluation of current research and to solving or discussing significant problems. In addition, cumulative examinations encourage the habit of regular, systematic, independent study through the reading of current chemical literature concurrent with course work and research. Finally, the nature of these examinations provides students with a periodic evaluation of their progress in these endeavors. Students pursuing the M.S. degree are not required to take cumulative examinations.

5.01 Scheduling of Cumulative Examinations. Students must start taking cumulative examinations in their concentrate at the beginning of the second semester (excluding summer semesters). These written examinations are held three times in the fall semester and three times in the spring semester for a total of six per calendar year. The cumulative examinations must be taken contiguously.

5.02 Required Performance. Students are required to pass three out of a maximum of nine examinations. All exams are closed book exams (unless specifically notified otherwise). The College of Sciences’s requirement of the Qualifying Examination for Ph.D. applicancy (Section 6.01) is satisfied by passing three cumulative examinations.

5.03 Policy. Students may see their cumes in the Department office after grades are announced. Arrangements to see the exam are made through the divisional cume representative who will be present during the viewing. No copies may be made.

The grading of individual cumulative exams cannot be appealed. If a student fails the Ph.D. cumulative exam requirement (i.e., by failing seven cumulative exams), the only grounds for an appeal for a reversal of this decision are that the failure results from biased or prejudiced treatment. Grading standards cannot be challenged. The mechanism for filing such an appeal is available from the chairman.

An un-excused absence from a cumulative exam will be counted as a fail. Should an exam be missed due to extraordinary events, the student may petition the Department to excuse the absence. If the petition is approved, the division in question will decide how the missed exam will be taken. Petitions must be filed before the next regularly scheduled cumulative exam.
6.00 Qualifying for Degree Applicancy (Ph.D. only)

6.01 Authorization to pursue a Ph.D. degree is a formal action taken by the Dean of the College of Sciences on the recommendation of the Department of Chemistry. A student becomes eligible for an applicancy recommendation upon gaining proficiency in three areas (Section 1.06), the satisfactory completion of three graduate courses, including two courses in the concentration area, and the passing of three cumulative examinations (Section 5). Students pursuing the M.S. degree do not require a similar recommendation.
7.00 Research

7.01 Advanced degrees in chemistry are research oriented, and all aspects of graduate work (courses, seminars, etc.) are geared to productive scholarship and research. After selection of a research advisor (Section 7.02), the student should concentrate on research throughout the rest of his/her graduate program. This will be the greatest challenge and the focus of the major portion of his/her energy. The student's resourcefulness, skills, and determination in handling the problem will have much to do with his/her future scientific progress and the kind of position obtained after completing the degree work.

7.02 Selection of a Research Advisor. In order to begin work on a research problem in the area of choice, a student needs to secure the approval and cooperation of a faculty member in that field who will serve as his/her research advisor (Section 7.03). This is done through a formal interviewing procedure, which by Department policy, cannot start before the midpoint of the entering semester or until all Faculty research exposes are completed. In the meantime, entering students are expected to become reasonably familiar with current research interests of the Faculty to an extent that will enable them to compile their formal research interview lists in consultation with the Graduate Affairs Committee. Students are to complete their interviews and to arrive at a research arrangement with a faculty member by the end of their entering semester. A student’s concentration is usually the same as that of the research advisor. However, a student may select a research advisor outside of his/her field of study provided approval is obtained from both divisions (Section 3.04). The student should also be aware that department rules limit the number of departmentally supported graduate students that a faculty member may take.

7.03 Research Advisor and Advisory Committee. The faculty member who agrees to become a student's research advisor also becomes chairman of the student's individual advisory committee. This committee replaces the Graduate Affairs Committee in its advisory capacity to the student and is charged with the responsibility of aiding the student in his/her remaining course program, following and reviewing the student's general progress, and finally, judging the acceptability of the student's thesis (M.S. degree, Section 10.00) or dissertation (Ph.D. degree, Section 11.00).

7.04 UNO Baccalaureates. Students who have had, during the course of their baccalaureate work, research associations with UNO faculty members should not choose those faculty members as graduate research advisors. Such arrangements are discouraged because they are inconsistent with the Department's policy of providing learning opportunities of the broadest possible scope. A student must petition the Department for consideration of any exceptions to this rule.
Changing Advisor. Under rare circumstances, a student may wish to change advisor during their research studies. In such situations, students are advised that research carried out up to that point does not contribute to their M.S. or Ph.D. degree. Thus, work described in their thesis or dissertation must come entirely from the research conducted under the new advisor. Furthermore, no extension beyond the normal five years of financial support from the Department will be provided.
8.00 Seminars

8.01 Seminars are one of the most important means of communicating progress in, and providing commentary on, topics of current chemical research. The Department maintains a comprehensive and vigorous program of seminars, which it considers a vital and integral part of the graduate program.

8.02 Invited Seminars. On a regular and frequent basis (usually weekly) seminars are given by invited speakers who present and discuss research efforts in all fields of chemistry. Students are required to attend these seminars, for the overall program constitutes an effective means of exposure to work both within and out-with the student's immediate research area.

8.03 Graduate Student Seminars. All students are required to participate in graduate student seminars. Participation is defined as attendance and discussion as well as presentation. The number of seminars to be prepared and presented by graduate students varies with the degree program (Sections 8.04 and 8.05). In any case, presentation of seminars by first-year students is not required.

With respect to sources of information for a presentation, students are advised that the Internet does not constitute part of the peer-reviewed primary literature. The Internet is one of many tools with which students can begin to build their seminar. Both the general lack of peer reviewing and the often-cursory nature of the material means that much of the Internet is ill suited for the level of presentation required. Furthermore, students are advised that the laws of plagiarism apply to the World-Wide-Web in the same way that they apply to the primary literature and other references. Plagiarism, cutting and pasting of text or diagrams without due recognition of the original source, is not acceptable practice. In this and other regards, students are strongly encouraged to read the literature seminar guides (See Section 13.00 and/or the Department website at: http://www.chem.uno.edu/) and talk to their advisor prior to preparing a seminar.

8.04 Graduate Literature Seminars. Each student, regardless of degree program, is required to prepare and present one literature seminar, the subject matter of which is to be taken from the current research literature and is not to be directly related to his/her present or previous research (See Section 13.00). The seminar should be presented at a level suitable for a multidisciplinary chemistry audience, but the student should clearly demonstrate in-depth knowledge of the topic. Grading of the seminar will encompass both these aspects. A formal abstract, prepared and distributed prior to the date of the seminar presentation, is required. Students must present their seminar during the fourth semester in the program (excluding summer semesters). Failure to do so will constitute a failing grade.

8.05 Graduate Research Seminars (Ph.D. only) During their last semester of residence, the Ph.D. degree candidate presents a formal seminar on his dissertation research. A short abstract is required for this research seminar. Masters degree candidates do not present research seminars unless they are directed to do so by their Advisory Committee.
8.06 **Academic Credit.** Graduate seminars carry academic credit in the manner of a lecture course. Up to six semester-hours credit is available under the Ph.D. program (three for each seminar), while under the M.S. program a maximum of three semester-hours credit is allowed. A grade of C or lower in seminar is considered failing and means that the student must repeat the seminar preparation and presentation with a new topic.
9.00 Admission to Degree Candidacy

9.01 Admission to degree candidacy is a formal action taken by the Dean of the College of Sciences upon the recommendation of the Department of Chemistry. It means that a student's work has been found to be consistent with the levels of quality and quantity generally associated with the M.S. degree or the Ph.D. degree.

9.02 M.S. Degree Candidacy. To be eligible for the candidacy recommendation, a student must show proficiency in three areas (see Section 1), completed at least four graduate classes (12 hours) with a B average or better, and successfully passed their literature seminar.

9.03 Ph.D. Degree Candidacy. To be eligible for the candidacy recommendation, the student must have:

1) Been granted Ph.D. degree applicancy status (Section 6.01).

2) Completed an addition two classes (6 hours) of graduate work (with a B average or higher) beyond that required by Applicancy.

3) Passed his/her Literature seminar (Section 8.05).

4) Passed his/her General Exam (Section 9.04).

9.04 General Examination (Research Review). Before the end of the fifth semester at UNO (excluding summer semesters) all Ph.D. students must take a General examination in the presence of their assembled advisory committee. Non-compliance with the deadline is equivalent to failing the exam. The purpose of the General Exam is manifold. Primarily it is to: 1) examine the student’s progress in research; 2) evaluate their problem solving skills and their ability to critically assess their research data; 3) determine their communication writing skills. Thus, the exam is designed to determine whether the student clearly understands their research problem and whether or not they possess the skills needed to complete a dissertation project within five years. It should be noted that some research projects, just by their nature, do not produce results in the short term. In those instances, there will be a greater emphasis on the student’s understanding and approach to the problem.

The student’s advisory committee (see also Section 3.05, 7.03) evaluates the student in the general exam and dissertation defense. The committee consists of at least four members; the student’s advisor who acts as committee chair; at least two members from the student’s division, and at least one from another division. The student’s advisor will select two of the committee members and the fourth member will be selected at random by the Chair of the Graduate Affairs Committee (this selection will be on a rotation basis so that all eligible faculty do serve on these committees).”

As part of the fifth semester General Exam, the student will write a report to be given to the committee members at least one week before the exam. The report will be 10-15 pages in length (double spaced) and should consist of an abstract (1/2 page),
detailed introduction and background (ca 4 pages), research progress (ca 8-9 pages), and an outline of future studies (1-2 pages). The oral portion of the exam will consist of a formal presentation by the student. The presentation should be about 20-30 minutes in length. While a short introduction and background is expected, the bulk of the presentation should focus on the research problem and results. The presentation will be followed by a question and answer period with the committee.

The following criteria will be used to evaluate the General Exam: 1) Progress in research; 2) Knowledge of the literature; 3) Communication skills; 4) Writing skills; 5) Problem solving skills; 6) Ability to assess results. The committee has the option to expand upon this basic framework:

After the completion of the exam, the advisory committee will give the student a written evaluation providing extensive input on their performance. One copy of this report will go into the student’s departmental file; a second copy will be given to the student. The outcome of this exam, as determined by a majority vote of the committee, will be one of three possibilities:

1) The student passes and can apply for Ph.D. candidacy.

2) The student fails the exam but will be given until the next semester (the Spring semester for General Exams given in the Fall, and the Summer for General Exams given in the Spring) to try to correct the problems cited by the committee. The student will then be re-examined and either pass or fail (no further extensions will be give).

3) The student fails and is judged not to possess the skills needed to complete the Ph.D. degree. In this case, the student will be moved to the Master’s program and a one-semester time limit set for the completion of the Master’s degree.
10.00 Master of Science Degree

10.01 The Master of Science degree is conferred upon those who have received the bachelor's degree and completed the specified requirements described below.

10.02 Concentration. The concentrate of concentration may be analytical biological, inorganic, materials, organic and physical chemistry (Section 3).

10.03 Requirements. A major component of the Masters degree in research (Section 7). Initially though, the student focuses on the required 18 hours of graduate course work (Section 4). In addition, to these major components, the student must also successfully complete seminar credit (Section 8.04). The breakdown of the overall requirements is:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal course work</td>
<td>18</td>
</tr>
<tr>
<td>Seminar</td>
<td>3</td>
</tr>
<tr>
<td>Formal research</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

10.04 M.S. Degree Candidacy. Students are recommended to the Dean of the College of Sciences as candidates when they have removed all undergraduate deficiencies (Section 1.06), completed at least 12 semester hours of course work with at least a 3.0 average (Section 4), and passed their literature seminar (Section 8).

10.05 Thesis. A thesis is required. It is to embody the results and interpretation of original research. A thesis must be approved by the student's Advisory Committee before the Department can recommend the student for the M.S. degree (see section 10.06). Bound copies of the final thesis must be given to the Department and the research advisor.

10.06 Final Exam. After the thesis is substantially complete, the candidate must pass a final, oral examination consisting of an explanation and defense of the thesis research before his/her Advisory Committee.

10.07 Time Limit. All requirements for the M.S. degree must be completed within 8 years.

10.08 M.S. Degree In Route to the Ph.D. Degree. See section 11.10.

10.09 Transferring from the M.S. Program to the Ph.D. Program. Students pursuing an M.S. degree who wish to transfer to the Ph.D. program must petition the faculty for permission to do so.

10.10 Steps in Completing the M.S. Degree. Following is a checklist showing the various stages and requirements for the M.S. degree along with the person or office responsible for the action. Students should refer to it often to ensure that necessary action is taken at the appropriate time.
## CHECKPOINTS FOR THE MASTER OF SCIENCE IN CHEMISTRY

<table>
<thead>
<tr>
<th>Steps</th>
<th>Form</th>
<th>Timing</th>
<th>Individual Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Completion of placement examinations</td>
<td>Immediately prior to first registration</td>
<td>Student (administered by Chemistry Department)</td>
<td></td>
</tr>
<tr>
<td>2. Plan initial course of study</td>
<td>During registration period</td>
<td>Student and Graduate Affairs Committee</td>
<td></td>
</tr>
<tr>
<td>3. Selection of advisor and concentration</td>
<td>Between middle and end of first semester</td>
<td>Student, faculty and department chairman</td>
<td></td>
</tr>
<tr>
<td>4. Creation of student's committee</td>
<td>After selection of advisor and before candidacy application</td>
<td>Research advisor and department chairman</td>
<td></td>
</tr>
<tr>
<td>5. Literature seminar</td>
<td>During fourth semester</td>
<td>Student</td>
<td></td>
</tr>
<tr>
<td>6. Application for candidacy</td>
<td>Proficiency in three areas, successful completion of at least four graduate classes, and lit. seminar.</td>
<td>Student and research advisor</td>
<td></td>
</tr>
<tr>
<td>7. Completion of course work</td>
<td>As soon as possible before final exam</td>
<td>Student</td>
<td></td>
</tr>
<tr>
<td>8. Application for degree and graduation fee</td>
<td>During registration for final semester</td>
<td>Student</td>
<td></td>
</tr>
<tr>
<td>9. Notice to College of Sciences of intent to graduate</td>
<td>Early in final semester</td>
<td>Department of Chemistry Graduate Coordinator</td>
<td></td>
</tr>
<tr>
<td>10. Request for final examination</td>
<td>See College of Sciences for deadline</td>
<td>Student and research Advisor</td>
<td></td>
</tr>
<tr>
<td>11. Final draft of unbound thesis to advisor and committee</td>
<td>At least 6 weeks prior to commencement - see College of Sciences calendar</td>
<td>Student</td>
<td></td>
</tr>
<tr>
<td>12. Final examination</td>
<td>At least 2 weeks after step 11 and 3 weeks before Commencement (see College of Sciences calendar for deadline)</td>
<td>Student and Committee</td>
<td></td>
</tr>
<tr>
<td>13. Submission of approved thesis to College of Sciences</td>
<td>No later than two weeks before commencement - see College of Sciences calendar for deadline</td>
<td>Student and advisor</td>
<td></td>
</tr>
<tr>
<td>14. Binding receipt or bound copies of thesis to department and advisor</td>
<td>Before commencement</td>
<td>Student</td>
<td></td>
</tr>
<tr>
<td>15. Awarding of degree</td>
<td>Commencement</td>
<td>UNO Chancellor</td>
<td></td>
</tr>
</tbody>
</table>
11.00: Doctor of Philosophy Degree in Chemistry

11.01  The Doctor of Philosophy is the highest degree offered by the University. It is conferred only for work of distinction, showing a high degree of research ability and knowledge in a specialized area of chemistry. It also requires the further development of creative knowledge and experience. By the time the degree is earned, the student should show promise of becoming a capable and independent investigator in the area of his choice.

11.02  Concentration.  The area of concentration may be: analytical biological, inorganic materials, organic, and physical chemistry (Section 3).

11.03  Requirements.  The Ph.D. degree is a research degree. As such, the majority of the 60 hours of study beyond the baccalaureate degree comes in the form of research. Initially however, students focus on the 18 hours of formal courses (Section 4.03) that are also required. The remaining hours are taken up by seminar and reading courses.

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal course work</td>
<td>18</td>
</tr>
<tr>
<td>Seminar</td>
<td>6</td>
</tr>
<tr>
<td>Research reading</td>
<td>4</td>
</tr>
<tr>
<td>Formal research</td>
<td>32</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

11.04  Ph.D. Degree Applicancy.  Students are recommended to the Dean of the College of Sciences as Ph.D. applicants (Section 6) after they successfully complete three graduate courses, including two courses in their concentrate, and successfully passed three cumulative exams.

11.05  General Examination.  Satisfactory completion of a General Examination (Section 9.04) is required of a Ph.D. candidate. The General Examination is usually the last requirement to be satisfied before applying for Ph.D. candidacy.

11.06  Ph.D. Degree Candidacy.  Students are recommended to the Dean of the College of Sciences as Ph.D. candidates after they have met the requirements outlined in Section 9.

11.07  Dissertation.  The heart of the Ph.D. degree is the dissertation, which is the culmination of an original investigation resulting in a tangible contribution of new knowledge. Candidates will concentrate most of their energies in performing the research leading to the written dissertation. The dissertation must demonstrate a mastery of modern research techniques, ability to perform original and independent research, and skill in formulating conclusions that in some way enlarge upon or modify accepted ideas.

11.08  Final Exam.  After the dissertation is substantially complete, the candidate must pass a final oral examination that consists of an explanation and defense of the dissertation research before his advisory committee.
11.09 **Residence.** The minimum residence requirement is three years of graduate study following a four-year undergraduate program of study in an accredited college or university. At least one year of continuous residence must be earned at UNO after successful completion of the qualifying examination (after reaching applicancy status).

11.10 **M.S. Degree in Route to the Ph.D. Degree.** Students working toward the Ph.D. degree who wish to secure an M.S. degree may do so by meeting the following minimum requirements:

a. Attained Ph.D. Degree Candidacy (Section 9)

b. Completed the graduate literature seminar (Section 8.04)

c. Publication (or acceptance for publication) of an article in a refereed scientific journal that reports a substantial piece of research done by the student while enrolled in the College of Sciences at UNO. The student's advisory committee will judge the suitability of the research article.

d. Pass a final oral examination defending the research before the committee and file Master's Examination Report.

Students seeking an M.S. degree by this route must file the same forms concerning intent to graduate that are required of regular thesis students.

11.11 **Time Limit.** All requirements for the Ph.D. degree must be completed within 12 years of passing the qualifying exam (i.e., passing the third cumulative examination, Section 5). A Ph.D. student cannot hold an assistantship beyond five years.

11.12 **Steps in Completion of the Ph.D. Degree.** The following is a checklist showing the various stages and requirements for the Ph.D. degree along with the person or office responsible for the action. Students should refer to it often to ensure that any necessary action is taken in time.
## CHECKPOINTS FOR THE DOCTOR OF PHILOSOPHY IN CHEMISTRY

<table>
<thead>
<tr>
<th>Steps</th>
<th>Form</th>
<th>Timing</th>
<th>Individual Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Completion of placement examinations</td>
<td></td>
<td>Immediately prior to first registration</td>
<td>Student (administered by Chemistry Dept.)</td>
</tr>
<tr>
<td>2. Plan initial course of study</td>
<td></td>
<td>During registration period</td>
<td>Student and Graduate Affairs Committee</td>
</tr>
<tr>
<td>3. Selection of advisor and concentration</td>
<td></td>
<td>Between middle and end of first semester</td>
<td>Student, faculty and Dept. chairman</td>
</tr>
<tr>
<td>4. Creation of student's advisory committee</td>
<td></td>
<td>After selection of research advisor and before request for applicancy</td>
<td>Research advisor and Dept. chairman</td>
</tr>
<tr>
<td>5. Request Qualifying Exam</td>
<td>Request for Qualifying Examination</td>
<td>Completion of three courses (two in concentrate)</td>
<td>Student and advisor</td>
</tr>
<tr>
<td>6. Request Ph.D. Applicancy</td>
<td>Report on Qualifying Exam/Request for Applicancy</td>
<td>Upon passing third cume</td>
<td>Student and advisor</td>
</tr>
<tr>
<td>7. Literature seminar</td>
<td></td>
<td>Before or during fourth semester</td>
<td>Student</td>
</tr>
<tr>
<td>8. Request General Exam</td>
<td>Request for General Examination</td>
<td>Completion of applicancy requirements, plus two addition graduate classes and lit. seminar</td>
<td>Student and advisor</td>
</tr>
<tr>
<td>9. Hold general examination Report and submit Request for Candidacy</td>
<td>Report on General Examination/Request for Candidacy</td>
<td>By end of fifth</td>
<td>Student and advisor</td>
</tr>
<tr>
<td>10. Completion of course work and research</td>
<td></td>
<td>As soon as possible before final exam</td>
<td>Student</td>
</tr>
<tr>
<td>11. Application for degree and graduation fee</td>
<td></td>
<td>During registration for final semester</td>
<td>Student</td>
</tr>
<tr>
<td>12. Notice to College of Sciences of intent to graduate</td>
<td></td>
<td>Early in final semester</td>
<td>Dept. of Chemistry and Graduate Coordinator</td>
</tr>
<tr>
<td>13. Research Seminar</td>
<td></td>
<td>During final semester</td>
<td>Student</td>
</tr>
<tr>
<td>14. Request for Final Examination</td>
<td>Request for Final Examination</td>
<td>See College of Sciences calendar for deadline</td>
<td>Student and research advisor</td>
</tr>
<tr>
<td>Step</td>
<td>Description</td>
<td>Timeline</td>
<td>Responsible Party</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>15.</td>
<td>Draft of dissertation to advisor</td>
<td>Early in last semester</td>
<td>Student</td>
</tr>
<tr>
<td>16.</td>
<td>Final draft of dissertation to committee members</td>
<td>At least 8 weeks before commencement and two weeks before final examination - (see College of Sciences calendar for deadline)</td>
<td>Student</td>
</tr>
<tr>
<td>17.</td>
<td>Final Examination</td>
<td>At least 2 weeks after step 17 and 3 weeks before commencement (see College of Sciences calendar for deadline)</td>
<td>Student and committee</td>
</tr>
<tr>
<td>18.</td>
<td>Submission of approved dissertation to College of Sciences</td>
<td>No later than 2 weeks before commencement - (see College of Sciences calendar for deadline)</td>
<td>Student and advisor</td>
</tr>
<tr>
<td>19.</td>
<td>Binding receipt or bound copies of dissertation to advisor and department</td>
<td>Before commencement</td>
<td>Student</td>
</tr>
<tr>
<td>20.</td>
<td>Awarding degree</td>
<td>Commencement</td>
<td>UNO Chancellor</td>
</tr>
</tbody>
</table>

### 12.00 Forms & Thesis/Dissertation Preparation

#### 12.01
Copies of the various College of Sciences and Chemistry Department forms described in this booklet can be obtained from the Chair of Graduate Affairs, the Graduate coordinator, or any other chemistry Faculty member.

#### 12.02
Instructions for the preparation of a thesis or dissertation can be found at the UNO College of Sciences website: [http://grad.uno.edu/](http://grad.uno.edu/)
13.00 Guidelines for Literature Seminar Preparation and Presentation

13.01. **Topic Selection.** Topics are to be selected based on the presence of important and fundamental aspects of new chemistry. The topic must be sufficiently narrow to permit an in-depth treatment. These restrictions require that the topic be selected from the recent (within 1-2 years) primary literature. Older work, review articles, and material from textbooks and monographs are used only for background purposes to bring the audience up to the level of the subject to be discussed. The contents of any review article must not constitute a major portion of the seminar. With respect to sources of information for a presentation, students are advised that the Internet does not constitute part of the peer-reviewed primary literature. The Internet is one of many tools with which students can begin to build their seminar, but both the general lack of peer reviewing and the often cursory nature of the material means that much of the Internet is ill suited for the level of presentation required. The Literature Seminar should not be directly related to your current or past research work, a previous presentation in a class or other venue, or to the research work of others in your research group. The seminar topic must be in an area of Chemistry but if you choose an interdisciplinary topic the seminar should focus on the chemistry rather than the other discipline.

13.02 **Topic Approval.** Your chosen topic must be approved by your respective division. Submit your abstract to the respective member of the Graduate Affairs Committee, allowing 1-2 weeks for approval. Your topic must be approved at least 8 weeks prior to the scheduled seminar date.

13.03. **Abstract Format.** The purpose of the abstract is to provide the audience with a permanent and useful record of your seminar. It should be a high level, critical discussion of the specific subject. Avoid lengthy discussion of the background material here and cite appropriate references instead. Abstracts should be 4-6 pages in length using one and one-half line spacing, including figures and references. Although the discussion is based upon work reported in the literature, your writing must use your own words. In rare instances where a direct excerpt is required, that excerpt must be placed in quotation marks. You are free to use equations, reactions, etc. from the literature so as long as the source is clearly identified in the text. Figures and tables should be referenced in the captions. Failure to follow these guidelines constitutes plagiarism. Furthermore, students are advised that the laws of plagiarism apply to the World-Wide-Web in the same way that they apply to the primary literature. Abstracts should be written in accordance with acceptable rules of grammar. Abbreviations, citations, nomenclature, etc. should follow the conventions employed by the American Chemical Society.

13.04 **Timing.** A final draft of the abstract should be submitted to your research advisor no less than 2 weeks prior to the scheduled seminar date, whilst the final version (pdf format) should be sent to the coordinator of seminars in the Graduate Affairs Committee (not the Graduate Coordinator for the Department) at least one week before the seminar date.
Seminar Presentation

Length. Plan to present an uninterrupted talk lasting between 40 and 45 minutes.

Visual Aids. Good visual aids and their proper use are important ingredients in a presentation of scientific material. Visual aids are most useful when presenting complicated reaction schemes, equipment diagrams and spectra. In using visual aids, you should recognize that the audience must be given adequate time and explanation in order to appreciate the material upon the screen. Make sure that each slide can be read from the back of the lecture hall. Small fonts (< 20 point) should be avoided. Similarly, figures and schemes should also be clear from a distance (figures taken directly from the literature frequently do not project well). Do not try to place too much information on a slide. Do not include extraneous material on the slide. Also, avoid an over-dependence on the slides. For example, it is unacceptable to read the contents of a slide to the audience, especially without elaboration.

Organization. The talk should contain as much background material as necessary to bring the general chemistry audience up to the level required by the subject, but this material should be organized carefully so that it does not consume more than 10-15 minutes. The seminar should be presented at a level suitable for a multidisciplinary chemistry audience, but the student should clearly demonstrate in-depth knowledge of the topic. Develop the subject with a clear emphasis on its important and fundamental aspects. You should not get overly involved with minor problems of an engineering, procedural, or mathematical nature. Avoid detailed derivations unless they are important or fundamental aspects of the work. Complex details, which are covered in the abstract (for readers who wish to study the subject more carefully), may be wholly unsuitable for oral presentation in the limited time available. Resist the temptation to present everything known about the topic. The speaker should predigest data and present pertinent examples as needed to illustrate important points.

Oral Delivery: The seminar should not be read from a written manuscript or recited from memory. The effectiveness of an oral delivery is inversely dependent upon the frequency with which the speaker must refer to notes or cards. Most of us cannot remember numerical data, and an outline of topics to be covered helps one to avoid leaving out something important. However, it makes a poor impression if you cannot remember structural formulas or mathematical expressions, or if you must look at your notes to recall the interpretation of some particular point. On the other hand, a thoroughly memorized seminar is also quite uninspiring. It is best to have the facts and ideas clearly in mind before the talk but to find the exact words during the talk. As is always the case, practice makes perfect; your talk should be practiced and given to an audience (research group or friends) before the scheduled seminar.

Interpretation. The interpretation of the data presented should be your own, and it may or may not be the same as that of the original investigators. If you wish to present views alternative to your own for the sake of discussion, you should make the reasons for disagreement clear. It is not possible to prepare adequately for a seminar
without studying the experimental sections of the papers to be discussed. Finally, if you do not know the answer to a question, do not hesitate to say so.

13.06. **Seminar Grade**
An acceptable seminar grade is an A or B. A one-grade-reduction in the final grade will be applied if the student did not present the seminar during the allotted (4th) semester. Further, an unacceptable seminar must be repeated using a new topic. The final grade will be applied to three credit hours of seminar (CHEM 6095) at the time of graduation.

13.07. **Summary of Deadlines**

<table>
<thead>
<tr>
<th>Prior to Scheduled Seminar Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-12 months</td>
<td>Graduate Affairs seminar coordinator will assign seminar date</td>
</tr>
</tbody>
</table>
| 8 weeks                         | Seminar Topic approved by the division  
|                                 | Seminar Title submitted to seminar coordinator |
| 2 weeks                         | Complete final draft of abstract  
|                                 | Submit to research advisor for approval |
| 1 week                          | Final version (approved by your research advisor) submitted to seminar coordinator for distribution |