The M.S. Programs

in

Chemistry and Biochemistry

at

The University of Oklahoma

Fall 2019

TABLE OF CONTENTS

PREFACE

The M.S. degree is awarded for the demonstration of the requisite advanced level of proficiency in research and/or scholarship in Chemistry and Biochemistry. The two options for the M.S. degree are a Thesis Option and a Non-Thesis Option. The M.S. (Thesis Option) is the degree program selected by students interested in developing research capability in a particular area of Chemistry or Biochemistry. The Thesis Option requires completion of appropriate coursework and the successful completion and oral defense of a M.S. Thesis. The M.S. (Non-Thesis Option) is the coursework degree generally selected by those students interested in obtaining an advanced degree in Chemistry and Biochemistry without research specialization. The Non-Thesis Option requires completion of appropriate coursework and successful completion of a comprehensive oral examination. A student should normally expect to spend approximately four semesters beyond the bachelor's degree in the pursuit of the M.S.

The purpose of this document is to describe the requirements for a student to be awarded the M.S. in the Department of Chemistry and Biochemistry. Individual topics will be discussed here in the approximate order that students will encounter them.

It should be noted that the student must also completely and independently satisfy the requirements prescribed by the Graduate College at The University of Oklahoma. These requirements are given in the Graduate College Bulletin, which can be obtained from the Graduate College.

I. PLACEMENT EXAMINATIONS

The purpose of the placement examinations is to establish the proficiency level of new students in the areas of Analytical Chemistry, Biochemistry, Inorganic Chemistry, Organic Chemistry, and Physical Chemistry. Because the results of these examinations will provide the basis upon which the Departmental Graduate Committee will advise the student with regard to initial graduate coursework, each student is required to take these placement examinations upon matriculation.

Entering graduate students who show no Physical Chemistry on their transcript must either complete a 1 credit hour module in physical chemistry offered at the beginning of the fall term or pass a Physical Chemistry proficiency exam. Entering graduate students who have not taken one year of Organic Chemistry must take and pass CHEM 3053 and/or CHEM 3153, or take and pass an Organic proficiency exam.

It is important that the student recognizes the importance of these examinations and therefore prepares for them, so that the Graduate Committee has an accurate assessment of the strength of the student's background in various areas and hence can advise the student properly. A thorough preparation for these exams has the additional advantage of serving as a review of past coursework and therefore as a means to maximize one's ability to begin his/her graduate career on a positive note. To this end, students will be given guidance for the placement examinations upon the department’s receipt of their acceptance into our program.

II. ENGLISH LANGUAGE REQUIREMENTS

A. According to the Graduate College Bulletin, any graduate student for whom English is not the native language must be certified as proficient in English before he/she may assume teaching duties that require contact with students. The English Assessment Program administers certification tests in oral and written English. The "Certified to Instruct" level is required to qualify for regular teaching assistant duties.

B. All students for whom English is not the native language are required by the Department of Chemistry and Biochemistry to demonstrate a suitable level of English proficiency. A student must reach the minimum level of "Certified to Support" as determined by the English Assessment Program of the university as a prerequisite for taking the oral defense of the thesis (M.S., Thesis Option) or the comprehensive examination (M.S., Non-Thesis Option).

III. COURSE NOMENCLATURE

Graduate courses that are part of Programs of Study in the Department of Chemistry and Biochemistry are denoted as CHEM G5XYZ, where X is the program of study, Y is the sequence number within that Program of Study (for Y = 0-9), and Z is the number of credit hours as follows:

X =	0	Departmental Requirements
	1	Analytical
	2	Biochemistry
	3	Inorganic
	4	Organic
	5	Physical
	6	Chemical Education
	7	Structural Biology
	8	Unused at present

Y =	0-2	Introductory Instruction (no graduate prerequisite)
	3-5	Advanced Instruction (regularly-offered course(s), beyond the introduction, for majors)
	6-7	Special Topics or Electives (one-time or irregularly offered courses}
	8	Practicum
	9	Seminar
Z =	0-4	Credit Hours (modules)

Within this numbering scheme, Graduate College-reserved course numbers are:

CHEM G5960 Directed Readings
CHEM G5980 Research for the Masters Thesis
CHEM G5990 Independent Studies
CHEM G6980 Research for the Doctoral Dissertation

IV. MASTER OF SCIENCE (Thesis Option)

The M.S. (Thesis Option) is the degree selected by students interested in developing research capability in a particular area of chemistry. Currently, these areas are analytical, biological, inorganic, physical, organic chemistry or structural biology. Students may take a more interdisciplinary approach for their thesis work if desired.

A. Coursework Requirements

1. All M.S. (Thesis Option) students must complete a minimum total of 30 credit hours of graduate work.

2. A total minimum of at least 14 credit hours must be taken in letter-graded courses at the 5XYZ level ($X \neq 0$ and $Y = 0$-8) selected from at least two disciplinary areas of Chemistry & Biochemistry (5XYZ, with $X = 1$-9 and at least two different X's).

3. For items 1 and 2 above, a maximum of one graduate level course (3 credit hours) may be taken in a department outside of the Department of Chemistry & Biochemistry as substitution(s). However, the departmental Graduate Committee must approve any such outside course in writing.

4. For students entering in the fall semester, each Thesis Masters graduate student in their first semester is required to complete the S/U-graded Fundamentals Seminar (5011) and Rotation (5080).

5. Up to 6 credit hours of the 30 total may be taken as Thesis Research (CHEM 5980).

6. In addition to the courses mentioned in items 2-5 above, the remainder of the 30 hour requirement (item 1) would be fulfilled by any combination of CHEM 5990, CHEM 5960, Disciplinary Seminars (CHEM 5191, 5291, 5391, 5491, 5591 or 5791) and any other courses carrying graduate credit.

7. All graduate students must also enroll and participate in the Departmental Colloquium (CHEM 5090) for zero credit hours throughout the entire period of their graduate studies (excluding summer semesters). In the first semester, masters students are required to attend five (5) seminars while enrolled in CHEM 5090. These seminars can be any combination of General Examination, Final Examination, CHEM 5X9Z ($X \neq 0$ Program seminars), departmental, Karcher/Barton seminars, research group meetings or literature club discussions. All graduate students are required to attend all of the Karcher/Barton seminars.

B. Transfer Credit

Graduate lecture course credits obtained in other institutions may be transferred to fulfill some of the above requirements or the 30-hour total requirement. As a first step, the student should consult the regulations in the Graduate College Catalog that govern the acceptability of a course for transfer. To receive credit for each such course, the student should submit a written petition first to the faculty of the appropriate Program of Study [$X = 1$-9; i.e., the one which reflects the nature of the course(s) being transferred], then to the Departmental Curriculum Committee, and finally to their Advisory Committee. This should be done prior to the first Advisory Conference meeting. If acceptable, each of these committees will in turn so signify by placing a written and signed memo to that effect in the student's file with the Graduate Program Assistant in the Departmental office. The Advisory Committee and the Graduate Committee will recommend accepting course equivalency to replace some of the 14 required credits of graded courses or to count the transferred credit against the 30 credit hours for graduation. The course(s) to be transferred should be

incorporated into the Report of the Advisory Conference for final approval by the Graduate Dean.

C. Thesis Research

i. Choice of Major Research Advisor

To ensure that new students are fully informed about the research opportunities available in the Department, all graduate students entering in the Fall semester are required to attend a series of talks at the beginning of the semester in which each faculty member describes research projects that are under investigation in his/her lab. Attendance at these brief talks is mandatory, and attendance will be taken. After attending the faculty presentations, students in our Thesis Masters program should make an appointment with at least three prospective Major Research Advisors to discuss in more detail the nature of their research and the specific dissertation projects that are available. Students are encouraged to have these individual meetings as soon as possible. At the conclusion of each meeting, the student should obtain the professor's signature on a form provided by the Graduate Program Assistant (updated annually to reflect current list of faculty). After obtaining a minimum of three signatures, the student must indicate his/her selected Program of Study and three preferences for a Major Research Advisor. The list will be reviewed by the Graduate Committee, which will forward its recommendation to the Department Chair. Subject to the consent of the faculty member, the Department Chair (in consultations with Committee A) will make the assignment of the student to a Major Research Advisor who will also serve as Chair of that student's Graduate Advisory Committee. This process must be completed by the end of the first semester of enrollment. Until this process is finished, a student is not formally registered with a research advisor. Students entering in the Spring semester are required to follow the procedures given above except those pertaining to the faculty talks.

ii. Thesis Research and Oral Defense of Thesis

Research on the thesis topic should commence as soon as the student has been assigned a Major Research Advisor.

Instructions for the format of the Thesis are obtained from the Graduate College. When the thesis is completed the student will present a 30-45 minute oral presentation of the major portions of the M.S. thesis research. This presentation will be followed by an oral examination on the thesis by the thesis committee (the student's Major Professor and two other members approved by the Graduate Dean), interested faculty and professional guests.

Deadlines for submission, which are coupled to the date of graduation, are given in the current class schedule for each semester and summer session. The Report of the Final Oral Examination, obtained from the Graduate College and brought to the exam by the student, must be completed and returned to the Graduate Dean within 72 hours following the completion of this process. The successful student must deposit one (1) unbound final copy to the Graduate College, and submit the thesis electronically on the SHAREOK website as instructed in the Graduate College Bulletin according to the deadlines of the Graduate College.

V. MASTER OF SCIENCE (Non-Thesis Option)

The M.S. (Non-Thesis Option) is the coursework degree generally selected by those students interested in obtaining an advanced degree in Chemistry and Biochemistry without research specialization. The actual course requirements are flexible and will be determined by the Departmental Graduate Committee after discussions with each student. This procedure allows each program to be personalized, thereby satisfying the interest and needs for the student's future career aspirations. Furthermore, depending on future career plans or interests, courses outside the department may become a significant proportion of the student's coursework.

A. Coursework Requirements.

1. All M.S. (Non-Thesis Option) students must take a minimum total of 32 hours of graduate coursework.

2. A total minimum of at least 16 credit hours must be taken in letter-graded courses at the 5XYZ level ($X \neq 0$ and Y = 0-8) selected from at least two disciplinary areas of Chemistry & Biochemistry (5XYZ, X = 1-9 and with at least two different X's).

3. For items 1-2 above, a maximum of two courses (6 credit hours) may be taken in department(s) outside of the Department of Chemistry & Biochemistry as substitution(s). However, the departmental Graduate Committee must approve all such outside courses in writing.

4. For students entering in the fall semester, each non-Thesis Masters graduate student in his/her first semester is required to complete the S/U-graded Fundamentals Seminar (5011) and Rotations (5080).

5. Inclusion of special problems and/or laboratory courses in the degree program is encouraged. Up to 9 credit hours of Independent Study (CHEM 5990), e.g., may be applied to the 32 total hours mentioned in item 1 above.

6. In addition to the courses mentioned in items 2-5 above, the remainder of the 32 hour requirement (item 1) would be fulfilled by any combination of CHEM 5990, CHEM 5960, Divisional Seminars (CHEM 5191, 5291, 5391, 5491, 5591 or 5791), and any other courses carrying graduate credit.

7. All graduate students must enroll and participate in the Departmental Colloquium (CHEM 5090) for zero credit hours throughout the entire period of their graduate studies (excluding summer semesters). All graduate students are required to attend all of the Karcher/Barton seminars.

B. Transfer Credit

Graduate lecture course credits obtained in other institutions may be transferred to fulfill some of the above requirements or the 32-hour total requirement. As a first step, the student should consult the regulations in the Graduate College Catalog that govern the acceptability of a course for transfer. To receive credit for each such course, the student should submit a written petition first to the faculty of the appropriate Program of Study [X = 1-9; i.e., the one which reflects the nature of the course(s) being transferred], then to the Departmental Curriculum Committee, and finally to their Advisory Committee. This should be done prior to the first Advisory Conference meeting. If acceptable, each of these committees will in turn so signify by placing a written and signed memo to that effect in the student's file with the Graduate Program Assistant in the Departmental office. The Advisory Committee and the Graduate Committee will recommend accepting course equivalency to replace some of the 16 required credits of graded courses or to count the

transferred credit against the 32 credit hours for graduation. The course(s) to be transferred should be incorporated into the Report of the Advisory Conference for final approval by the Graduate Dean.

C. Comprehensive Examination.

The Graduate College requires a comprehensive examination that covers all course work taken for the degree. The format of the exam, either oral or written or both, will be determined by the student's Examination Committee, which should be composed of three faculty members as designated on the Admission to Candidacy Form.

VI. YEARLY REVIEW OF MS GRADUATE STUDENTS

The performance of all MS graduate students will be reviewed annually by the Graduate Committee for the purpose of determining the continued status of each student in the MS graduate program. At the end of each academic year, each student will prepare a summary of his/her progress by completing a form provided by the Graduate Program Assistant. On the basis of graduate course performance (and research performance if in the Thesis Option), recommendations regarding the status of students in the MS program will then be made to the Graduate College.

VII. ACADEMIC MISCONDUCT

The Student Code specifies the responsibilities and conduct of students at OU, and it is the responsibility of each student to be familiar with the definitions, policies, and procedures concerning academic misconduct. The Student Code document is available from the Office of the Vice President for Student Affairs (http://www.ou.edu/studentcode/OUStudentCode.pdf). The definition of academic misconduct is as follows:

Academic misconduct includes (a) cheating (using unauthorized materials, information, or study aids in any academic exercise), plagiarism, falsification of records, unauthorized possession of examinations, intimidation, and any and all other actions that may improperly affect the evaluation of a student's academic performance or achievement; (b) assisting others in any such act; and (c) attempts to engage in such acts.

Of particular note for chemists and biochemists in training is the issue of citation, and it is important that Chemistry and Biochemistry students understand, before they write their research proposition and dissertation, that any facts, conclusions, or ideas that are extracted from another paper or source must be properly referenced back to their source. In addition, verbatim usage of another author's text—even when it is from within the same research group—must be placed in quotes with proper citation. Failure to do so constitutes plagiarism. Simply combining extensive quotes from existing sources without providing original organization and argumentation also constitutes plagiarism. Proper professional ethics demands proper citation in all papers and presentations.