Department of Chemistry and Chemical Biology

2018 - 2019

Regulations for Graduate Programs in Chemistry: Ph.D., Non-thesis M.S. and Thesis M.S.

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CONTENTS

I. INTRODUCTION AND SUMMARY OF PROGRAMS

I.A. General Description of the Thesis and Non-Thesis Graduate Programs

The Department of Chemistry and Chemical Biology (CCB) offers three advanced degrees: the non-thesis, coursework-based M.S. (part-time students), the thesis M.S. (full-time students), and the Ph.D. (full-time students). The Ph.D. degree requires a thesis based on substantially more research than required for the M.S., and may be pursued with or without a master's degree as an intermediate stage. We currently do not accept applications for the Thesis M.S. degree from outside of Northeastern University. There are two venues to enter this program: the PlusOne BS/MS program or as a terminal degree from the Ph.D. program.

The main features and requirements of the degree programs are summarized on the following pages. Since these programs take several years to complete, various checkpoints have been set up along the way to ensure that a student makes satisfactory progress. A brief summary of these checkpoints and the times in a student's career at which they occur follows the degree summaries. The purpose of the remainder of this booklet is to describe in detail the regulations and procedures that govern these degree programs; most of these rules apply to the thesis-based programs.

Students in the non-thesis M.S. program are not eligible for financial support through the Department. This program is generally designed for students who have regular full-time employment. The main requirement for the part-time non-thesis M.S. program is completion of 30 semester hours of credits in graduate courses numbered from CHEM 5600 through CHEM 8000; this and other rules are listed in the program summary that follows. An overall GPA of 3.000 is required for graduation.

Students enrolled in the thesis M.S. program are not eligible for TA awards, although they may receive RAs if their thesis advisor is able and willing to support them. Students in the Ph.D. program who are making satisfactory progress toward their degree (GPA and research) are eligible for financial support in the form of Teaching Assistantships (TAs) or Research Assistantships (RAs) through the Department. TAs, RAs and students supported on Fellowships with tuition in the Chemistry and Chemical Biology Department must be full-time students in residence. The Thesis M.S. or Ph.D. thesis programs may only be pursued on a full-time basis. The Thesis M.S. program consists of a minimum of 32 semester hours of graduate credit in courses (21 SH),

seminar (1SH), research (10 SH), and a thesis based on this research. In the Ph.D. thesis program, a minimum of 33 semester hours is required (28 SH in courses). The main difference between M.S. and Ph.D. programs is that the Ph.D. degree requires much more extensive and thorough research and a correspondingly more complex thesis, as well as the successful passing of the cumulative examinations and a research proposal defense to qualify for Ph.D. candidacy, and a dissertation examination upon completion of the thesis.

In the first two semesters in either the Ph.D. program or thesis M.S. program, students concentrate on fulfilling course requirements and choosing a research advisor, and they may begin research as well. Beginning with the first summer, the programs followed by students in the M.S. and Ph.D. tracks differ considerably. The M.S. student must concentrate on finishing up the required coursework, carrying out research and writing the M.S. thesis. The main concern of Ph.D. students during their first summer is passing the cumulative examinations. In the fall of their second year Ph.D. students must finish course requirements, present a seminar and begin their thesis research in earnest.

B. Special Student Status and Transfer Credits

Special student status allows students to take up to 12 semester hours of credit at Northeastern University in graduate courses offered in the CCB Department. Students who are admitted as special status students are not enrolled in a degree program and may not "transfer" to any of our other graduate programs. Students who wish to further their education by earning an M.S. or Ph.D. must apply to and be accepted into one of these graduate programs. Students who are successfully admitted may apply for transfer credit (up to 12 semester hours) for coursework taken as a special student.

Students in the degree programs who have completed graduate chemistry courses in other U.S. accredited institutions may apply to the College of Science Graduate Student Services Department for transfer credit for up to 9 semester hours of transfer credit which can count toward the required semester hours of chemistry graduate coursework. However, the student must have earned a grade of B or better in each course and the student may not have used the credit for these courses at any

other institution toward any other degree. Please contact Tara Loschiavo (t.loschiavo@northeastern.edu) regarding the current transfer credit procedures.

C. Program Requirements and Typical Timetable

The program requirements for the M.S. and Ph.D. degrees are outlined on the following pages. There is also a timetable describing the first two years for students entering with a B.S. degree in preparation for the PlusOne B.S./M.S. program.

Requirements for Graduate Programs
Northeastern University
Department of Chemistry and Chemical Biology
Summary of Chemistry Ph.D. Program for Students Entering with B.S. Degree

	Requirements	
1	**Total Credit Hours**	33 Semester (Credit) hours
2	**Length of Program**	Approximately 5 years; must be completed within 7 years
3	**Course Requirements**	18 credits of lecture-based graduate courses numbered between CHEM 5550 and CHEM 7799 are required. (Typical courses are 3 SH.) Up to 6 SH of graduate credits from outside Department may be substituted with prior approval of the Graduate Coordinator. Other required courses: CHEM 5599 (0 SH) Fall and Spring: Prerequisite to CHEM 5600 and 7730 CHEM 5600 (3 SH) Research Skills and Ethics CHEM 7730 (4 SH) Advanced Laboratory Methods CHEM 7750 (3 SH) Advanced Problem Solving CHEM 8984 (4 SH) Research Registration in CHEM 8504 Graduate Seminar in each semester. Presentation of one seminar is required, with a letter grade assigned in that semester (1 SH). At least one additional presentation is required before graduation, including the final thesis defense presentation. Registration in CHEM 9986 Research (0 SH) as necessary until course work is completed and cumulative exam series is passed to establish Ph.D. candidacy. After obtaining Ph.D. candidacy, students register for CHEM 9990 Dissertation for two semesters (typically summer of second year and fall of third year). Then students register for CHEM 9996 Dissertation Continuation every term until thesis is defended, approved and submitted.
4	**Graduation Requirements**	3.00 or better overall GPA; Ph.D. thesis that is successfully defended before the full doctoral dissertation committee, approved, and submitted
5	**Measures of Satisfactory Progress**	Selection of research advisor by the end of the first year; attainment of 3.00 or better GPA after 2 semesters of residence, and continuing 3.00 thereafter; passing 3 cumulative exams out of a series of 5; attainment of Ph.D. candidacy by passing cumulative exams, completing required courses and a successful research proposal defense in the second year; positive annual review of research progress by 3- or 4-person research committee.

Northeastern University
Department of Chemistry and Chemical Biology
Summary of Chemistry Ph.D. Program for Students Entering with Approved M.S. Degree

	Requirements	
1	**Total Credit Hours**	7 Semester hours
2	**Length of Program**	Approximately 4 years; must be completed within 7 years
3	**Course Requirements**	CHEM 7750 (3 SH) Advanced Problem Solving CHEM 5600 (3 SH) Research Skills and Ethics is required unless an equivalent course has been completed during MS study. If equivalent has been taken, another 3 SH elective graduate course is required CHEM 5599 (0 SH) Fall and Spring: Prerequisite to CHEM 5600. Registration in CHEM 8504 Graduate Seminar in each semester. Presentation of one seminar is required, with a letter grade assigned in that semester (1 SH). At least one additional presentation is required before graduation. Registration in CHEM 9986 Research (0 SH) as necessary until course work is completed and cumulative exam series is passed to establish Ph.D. candidacy. After obtaining Ph.D. candidacy, students register for CHEM 9990 Dissertation for two semesters (typically summer of second year and fall of third year). Then students register for CHEM 9990 Dissertation Continuation every term until thesis is defended, approved and submitted (Students who are in the Ph.D. program and who complete the requirements for either the thesis or coursework M.S. do not have to take any additional requirements beyond the ordinary Ph.D. requirements. The 7 SH requirements described here apply to those entering with a previously attained M.S. degree.)
4	**Graduation Requirements**	3.00 or better GPA; Ph.D. thesis that is successfully defended before the full doctoral dissertation committee, approved, and submitted.
5	**Measures of Satisfactory Progress**	Selection of research advisor by the end of the first year; 3.00 or better GPA; passing 3 cumulative exams out of a series of 5 exams; attainment of Ph.D. candidacy by passing cumulative exams, completing required coursework, and a successful research proposal defense in the second year; positive annual review of research progress by 3- or 4-person research committee.

Northeastern University
Department of Chemistry and Chemical Biology

Summary of Chemistry M.S. Thesis Program (for Northeastern PlusOne students only)

	Requirements	
1	**Total Credit Hours**	32 Semester Hours
2	**Length of Program**	Approximately 2 years including the final year as an undergraduate and one year as a graduate student.
3	**Course Requirements**	18 SH of lecture-based credits in graduate courses numbered between CHEM 5550 and CHEM 7999. (Typical courses are 3 SH.) Up to 6 SH of graduate credits from outside Department may be substituted with prior approval of the Director of Graduate Studies. Required Courses: CHEM 5600 (3 SH) Research Skills and Ethics CHEM 5599 (0 SH) Fall and Spring: Prerequisite to CHEM 5600. 10 SH of CHEM 5984 Research must be completed, or the combination of 7730 Advanced Laboratory Methods (4 SH) and 6 SH of CHEM 5984. CHEM 5599 (0 SH) fall and spring: Prerequisite to CHEM 5600. Registration in CHEM 5904 Graduate Seminar in each semester. Presentation of one seminar is required, with a letter grade assigned in that semester (1 SH).
4	**Graduation Requirements**	3.000 or better GPA; M.S. thesis approved and signed by thesis committee and submitted.
5	**Measures of Satisfactory Progress**	Selection of research advisor; attainment of 3.00 or better GPA after 2 semesters of residence, and 3.00 by completion of course credits; positive annual review of research progress by 3- or 4-person thesis committee.

Northeastern University
Department of Chemistry and Chemical Biology

Summary of Chemistry M.S. Non-Thesis Program (part-time)

	Requirements	
1	**Total Credit Hours**	30 Semester Hours
2	**Length of Program**	Variable - 7 year limitation
3	**Course Requirements**	30 SH of credits in graduate courses numbered between CHEM 5550 and CHEM 7999. (A typical chemistry course is 3 SH.) Up to 6 credits of graduate courses from outside the Department of Chemistry and Chemical Biology may be substituted with prior approval of the Director of Graduate Studies. At least 12 credits from outside a main area of specialization (analytical, organic, physical, biochemical) must be taken, distributed over at least two additional areas.
4	**Graduation requirements**	3.00 or better GPA
5	**Measures of Satisfactory Progress**	Maintenance of satisfactory GPA. Continuous registration, with successful completion of at least 1 course per semester

Typical Timetable for CHEM Graduate Curriculum for Thesis Ph.D. and M.S. Programs

*core courses advised for specialty or individual
**required courses

Fall Semester, first year:
Core course 3 SH
Core course 3 SH
Core course 3 SH
8504 Seminar 1 SH (S/U)
5599 – Intro to Research Skills and Ethics 0 SH (Prerequisite for CHEM 5600 and CHEM 7730)

Spring Semester, first year:
Core course 3 SH
Core course 3 SH
Elective course 3 SH
8504 Seminar 1 SH (S/U)
5599 – Intro to Research Skills and Ethics 0 SH (Prerequisite for CHEM 5600 and CHEM 7730)

Summer Semester, first year (see M.S. options below):
5600 Research Skills and Ethics** 3 SH **required course
7730 Advanced Laboratory Methods** 4 SH
8960 Exam Preparation - Doctoral** 0 SH (for doctoral students only)

Fall Semester, second year:
7750 Advanced Problem Solving** 3 SH
8504 Seminar** 1 SH (presentation; graded)
8984 Research 4 SH

Ph.D. Candidacy is reached at end of Spring semester of the second year by passing cumulative exams, completing the required 33 SH of graded coursework, and successfully defending a thesis proposal.

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Options:
Thesis M.S.: if M.S. thesis option is chosen or cumulative exams are not passed, a student could take: CHEM 5600 and 7730 or M.S. Research (4 SH) in summer; seminar (1 SH) and CHEM 5984 Research (6SH) in fall of 2nd year; CHEM 7996 M.S. Thesis Continuation (0 SH) and complete research and thesis in spring of 2nd year.

D. Summary of Checkpoints in Thesis Programs

1. Choice of Research Advisor: During fall of year 1, students will do at least one, or two, six-week laboratory rotations: mid Sept – Oct and Nov – mid December. There is an optional third rotation in the spring of year 1. Student must file the Research Advisor Selection Form and receive departmental approval by the end of spring of the first year. (See Section II.G.1. and Appendix). The rotations are meant to give each student a "home" with a desk and the opportunity to get to know graduate students and the culture in laboratories of interest.

2. Attainment of M.S. or Ph.D. Student Status: after 2 semesters of residence with a GPA $\geq$ 3.00. (See Section II.A.2.)

3. Appointment of 3-person Research Committee: before the start of the second year after attainment of M.S. or Ph.D. student status. (See Section II.G.3. and Appendix)

4. Passing of Cumulative Exams: during the first summer of study for students in the Ph.D. program.

5. Proposal presentation: The PhD student will present a thesis research proposal in a seminar to the Department of Chemistry and Chemical Biology during spring semester of the second year, with all thesis committee members present. This can serve as the student's first committee meeting. For this research proposal defense, the student identifies a research gap or problem (on their own or with the help of their advisor) related to their specific ongoing research project, and proposes an independent research project proposal. The committee asks questions about the science behind the proposal, and general concepts about which the student should have sufficient command. Through the presentation and subsequent questioning, the student must demonstrate that they have an ability to think broadly within the area of their research project, beyond their ongoing work, as well as a command of the relevant literature that is appropriate to their level (a student at the end of the 2nd year).

6. Establishment of Ph.D. Degree Candidacy: passing of the cumulative exams, and completion of all required coursework, including a graded seminar, and a successful proposal defense. Ph.D. candidacy is typically achieved at the end of the spring semester of the second year.

7. Review of Progress: reviewed for GPA and requirements at the end of each semester for the first 2 years. The research progress of Ph.D. students is reviewed every year by the 3-4-person Research Committee. (See Section II.P. and Appendix)

8. Graduation Clearance: students approaching completion of degree (i.e., before the beginning of the final semester) should consult with departmental Academic Coordinator to check that all degree requirements are fulfilled. (See Section II.R.)

8. Time Limits for All Programs and for University Financial Support

(See Section II.C and College of Sciences Graduate Programs Catalog.)

a. General Time Limits:

i. Course credits are valid for a maximum of seven years.

ii. After the establishment of degree candidacy, a maximum of 5 years will be allowed for the completion of degree requirements.

b. University Financial Support Limits for M.S. Thesis Program:

i. Students in the terminal M.S. program are not normally supported after the end of the spring semester of the second year.

ii. Students who fail to pass the cumulative exam series are not supported after the end of the fall semester of the second year.

c. University Financial Support Limits for Ph.D. Thesis Program:

i. Support beyond the spring semester of the fifth year after candidacy (fourth year for a student who entered with an approved M.S.) may be provided only on a favorable written recommendation from the student's Research Committee and approval by the Academic Standing Committee.

ii. Further extension of support beyond the spring semester of the sixth year (fifth year for those who entered with approved M.S.) requires a favorable written recommendation from the Thesis Committee and approval by a 2/3 vote of the full departmental faculty.

iii. No support beyond the seventh year.

E. Academic Advisors

1. Academic Advisors for Part-time M.S. Students

The Director of Graduate Studies serves as the academic advisor for part-time non-thesis M.S. students. Students who wish advice from the advisor are strongly urged to e-mail first, and if necessary, to schedule a phone call or meeting. The Director of Graduate Studies for the 2018-19 academic year is Prof. Penny Beuning (p.beuning@northeastern.edu). Advice on registration and other issues may also be obtained from the Academic Coordinator, Tara Loschiavo (t.loschiavo@northeastern.edu).

2. Academic Advisors for First Year Students

The purpose of these rules and regulations is to aid students in establishing a firm and broad enough foundation to build confidently upon for future research, and in finishing their degree in a timely fashion so that they can begin their professional careers. Taken all together, they may seem a bit intimidating. To help first year students get started, professors are assigned by area of interest to serve as academic advisors for the first year. These advisors help the student pick the courses which best fit the student's own background and interests and conform to the various regulations. Meetings for first year students are scheduled during orientation, but in any case, students should be certain to meet with their advisors before registration. The advisors for the current academic year are:

Analytical – **Leila Deravi**
Bio-organic/Medicinal - **Michael Pollastri**
Physical, Inorganic & Materials – **David Budil**
Chemical Biology – **Penny Beuning**

Industry-Entry Ph.D. – Sunny Zhou

Once students identify a research advisor, the student's research advisor also becomes the student's academic advisor after the first year.

It is recommended that students enroll in three courses each semester in the first year. Specimen programs for first year students are listed below in Section I.H. for each of the traditional fields for a typical student. Each student's program, however, is tailored to fit that individual in consultation with the academic advisor and may vary from the typical program in that field.

F. Full-Time Student Status

According to University regulations:

1. Students who hold Stipended Graduate Assistantships (TA, RA, or stipended fellowship) will be considered full-time if enrolled for a minimum of 6 semester hours of credit for the semester.

2. Students without a stipend will be considered full-time if they are enrolled in a minimum of eight semester hours of credit for the semester. This includes students who hold NUTFs (tuition fellowship assistance only; no RA or TA stipend).

3. Students in residence who are enrolled in Dissertation (CHEM 9990), Research (CHEM 8984), or PhD Exam Prep (CHEM 8986) are considered full-time.

4. All graduate students who are in M.S. or Ph.D. Thesis or Dissertation Continuation status (enrolled in CHEM 7996 or 9996) will be considered to be full-time if they are in residence. Non-resident students will be judged on a case-by-case basis. Such exceptions call for a petition via the Departmental Graduate Academic Standing Committee to the Graduate Student Services Director of the College of Science (COS).

Only those graduate students who meet the criteria for full-time student status, as defined above, are eligible for financial support from the university. Note, however, that only full-time students in thesis programs are eligible for support through the Department of Chemistry and Chemical Biology (See Section I.A). **ANY STUDENT**

WHO IN ANY GIVEN SEMESTER FALLS BELOW THE MINIMUM NUMBER OF SEMESTER HOURS OR COURSES REQUIRED TO MAINTAIN FULL-TIME STATUS RISKS LOSS OF THAT SUPPORT. International students risk loss of their student visa status. Students are strongly encouraged not to drop courses (i.e., take a "W") when this reduces their load below the minimum requirements.

International Students: Maintaining your registration status as a full-time student is essential for international students, as is maintaining active status of your visa. Please keep in contact with the Office of Global Services (OGS: https://www.northeastern.edu/ogs/) for current regulations and reporting requirements of the Student Exchange Visitor Information System (SEVIS) of the U.S. Bureau of Immigration and Customs Enforcement (ICE).

G. Summary of First Year Requirements in the Ph.D. Program

In summary, a first year student in the Ph.D. program who is supported on a Stipended Graduate Assistantship (SGA: Teaching or Research Assistantship or Stipended fellowship) normally takes 3 graduate courses during both fall and spring semesters, registers for seminar (CHEM 8504) each semester, registers for CHEM 5599 (prereq to CHEM 5600 and CHEM 7730) in both fall and spring semesters, and in the summer registers for CHEM 5600 Research Skills and Ethics, 7730 Advanced Laboratory Methods, and 8960 Qualifying Exam Preparation. The cumulative (qualifying) exams are taken during 5 weeks starting in July and ending in August. Stipended graduate students must be enrolled for a minimum of 6 semester hours to maintain full-time student status. Other students with no university support or only a tuition fellowship must be enrolled for 8 semester hours to maintain their full-time student status. Students for whom English is a second language may be required to take a course in the English language center. This course replaces one of the graduate chemistry courses only for the purpose of meeting registration credit requirements.

To remain in the Ph.D. thesis program after the spring semester of the first year, the student must have a minimum grade point average of 3.00. To continue in the M.S. thesis program the minimum average GPA must also be 3.00 (see Section II.A for details of GPA requirement). **Students must choose their research advisor by the end of the spring semester of the first year in order to be eligible for departmental financial support.**

H. Course Selections for First-Year Students in Thesis Programs

Seminar, Ethics and Lab Methods (5599/5600/7730) are required for all first-year students. Chemistry courses should be selected during advising and when appropriate, discussion with potential research advisor.

II. REGULATIONS, REQUIREMENTS, AND GUIDELINES

A. Coursework Grades

1. Overall Grade Point Average (GPA)

A student's GPA is calculated by multiplying the numerical grade equivalent by the number of semester hour credits, summing the product for all courses taken, and dividing the result by the total number of course semester hours taken. For all advanced degree programs, a student must maintain a GPA of 3.00 or better to remain in good standing. A GPA of 3.00 or better is required for graduation from all chemistry graduate programs (non-thesis M.S., thesis M.S., and full-time Ph.D.).

Student performance in graduate chemistry courses will be graded according to the traditional four-point academic scheme in which grades of "A, B, C, F" are numerically equivalent to 4.00, 3.00, 2.00 and 0, respectively. In graduate school, "D" grades are not awarded. Generally, "A" grades are reserved for student performance that is of the highest caliber. "B" grades are awarded for satisfactory performance. "C" and "F" grades reflect work that is below or dramatically below the performance normally expected in graduate work. If a student becomes seriously ill, is passing the course at that time, and is unable to complete his/her coursework, the professor may award the student a grade of "I" (incomplete), provided an "I" Grade Contract form is completed by the student and the professor. Students who receive an "I" have one

calendar year to make up the missing coursework if they wish to clear the "I" from their permanent record.

Students may withdraw from a course without penalty until the first deadline stated on the Academic Calendar published by the Registrar's Office. After this time, a student who withdraws from a graduate course will receive a "W" grade on their permanent record. Students may withdraw from graduate classes until the second deadline set by the Registrar's Office. The specific deadlines for withdrawal without a "W" and with receipt of a "W" grade are published by the Registrar's Office each term and graduate students are responsible for acquiring this information.

2. GPA Requirements for Continuation Beyond Second Semester

Graduate students in thesis programs in the Department of Chemistry and Chemical Biology must maintain full-time student status and must meet certain standards of performance in courses in their first two semesters in order to be considered as making satisfactory progress. If students meet these standards, they may continue in the program and qualify as M.S. or Ph.D. students the first summer and into the second year. The standards for the M.S. and Ph.D. programs are listed below.

a. M.S. Program

A GPA ≥ 3.00 in at least 5 chemistry graduate courses numbered from CHEM 5550 through CHEM 7999 must be achieved during the first two semesters to continue beyond the spring semester in the graduate program as an M.S. student. (A final GPA of 3.000 is needed for graduation.) Up to 6 semester hours of approved graduate courses from outside the Department may be used in establishing the minimum GPA. Approval for such courses must be sought in advance from the Director of Graduate Studies. If more than 5 courses are taken, one course may be dropped for the purpose of computing the GPA needed for continuation.

b. Ph.D. Program

A GPA ≥ 3.00 in at least 5 courses numbered from CHEM 5550 through CHEM 7999 must be achieved during the first year to continue in the Ph.D. program. (A GPA of 3.000 is required for graduation.) Up to 6 semester hours of approved graduate courses from outside the Department may be used in

establishing the minimum GPA. Approval for such courses must be sought in advance from the Director of Graduate Studies.

c. Exceptions

International students required to participate in courses in the English Language Center still need to take the same number of Chemistry courses as specified above by the program. The English courses are not included in calculating the first year GPA required in determining satisfactory progress. If a student has not completed the minimum of 5 graduate courses solely because of such coursework restrictions, the student will have their standing as a M.S. or Ph.D. student determined at the end of the semester in which their fifth course is completed. For students taking remedial undergraduate courses, which carry graduate numbers outside of the above listed numbers, all such courses are included in calculating first year averages.

3. GPA Requirement for Continuation in the Non-thesis M.S. Program

Graduate students in the non-thesis, coursework-based M.S. program of the Department of Chemistry and Chemical Biology will be reviewed annually to determine whether they are making satisfactory progress toward the degree. Such students must complete at least two courses (6 SH) per year and must have achieved a GPA of at least 3.00 after 15 SH and maintained the 3.00 after 24 SH in order to be considered as making satisfactory progress. Note that the graduation requirement is a GPA of 3.00.

B. Credit Hour Requirements of the Graduate Programs

1. Ph.D. Program

For a student entering the Ph.D. program with a B.S. degree, current regulations require at least 18 semester hours of lecture-based courses in graduate courses numbered from CHEM 5550 through CHEM 7999, plus an additional 3 SH in CHEM 5600 (Note: CHEM 5599 must be taken as a prereq to CHEM 5600 in fall and spring), 4 SH in 7730 (also has CHEM 5599 as a prerequisite) and 3 SH in 7750. Up to 6 semester hours of graduate courses from outside of the Department may be substituted with prior approval of the Department. At least 4 semester hours of CHEM 8984

Research, and 1 semester hour of graded seminar, CHEM 8504, make up the balance of the total 33 semester hours of credit. (If more than 4 SH of Research were registered for, only the first 10 SH count towards the total credits required for the Ph.D. degree.)

For a student entering the Ph.D. program with an approved M.S. (see Section II.I), required coursework is 6 SH of lecture-based credits in graduate courses numbered from CHEM 5550 through CHEM 7999, plus 1 SH of graded seminar. CHEM 5600 (3 SH) Research Skills and Ethics is a required course unless an equivalent course has been completed during M.S. study. (Note: CHEM 5599 must be taken as a prerequisite to CHEM 5600 in fall and spring.)

2. Thesis M.S. Program

For the thesis-based M.S. program, at least 18 semester hours of credit in graduate courses numbered from CHEM 5550 through CHEM 7999 are required, plus an additional 3 SH in CHEM 5600 (Note: CHEM 5599 must be taken as a prereq to CHEM 5600 in fall and spring). Up to 6 semester hours of graduate courses from outside of the Department may be substituted with prior approval of the Director of Graduate Studies. At least 10 semester hours of Research CHEM 5984, and 1 semester hour of graded seminar, CHEM 5904 make up the balance of the total 32 required semester hours of credit. (If more than 10 SH of M.S. Research were registered for, only the first 10 SH count towards the total credits required for the M.S. degree.) The research credits can also be satisfied with 6 SH of M.S. Research, CHEM 5984, plus 4 SH of CHEM 7730 Advanced Laboratory Methods (after completing the pre-requisite CHEM 5599).

3. Non-thesis M.S. Program

For the non-thesis, coursework-based M.S. program, at least 30 semester hours of credit in graduate courses numbered from CHEM 5550 through CHEM 7999 are required. Up to 6 semester hours of graduate courses from outside of the Department may be substituted with prior approval of the Director of Graduate Studies. Full-time students opting to obtain a non-thesis M.S., either in the course of their studies or in leaving the full-time program, may only count up to 8 SH of CHEM 8984 Master's

Research credit (considered equivalent to CHEM 8505 and 8506, Directed Laboratory and Directed Literature Research) towards this degree.

C. Course Distribution Requirement for Coursework M.S.

A distribution requirement has been established to provide some breadth in the program for the coursework-based M.S. For the non-thesis, coursework-based M.S., the distribution requirement is 12 SH of credit from outside a main area of specialization (analytical, biochemistry, organic, physical), distributed over at least two additional areas.

A list of lecture-based graduate courses and the distribution area they fulfill is provided in the table below. Please refer to http://www.northeastern.edu/registrar/cdr.html for course descriptions and relevant prerequisites.

Course Number	Course Categories and Titles	SH
CHEM:	**Analytical Chemistry**	
5611	Analytical Separations	3
5612	Principles of Mass Spectrometry	3
5614	Electroanalytical Chemistry	3
5613	Optical Methods of Analysis	3
7301	Special Topics in Analytical Chemistry	3
5660	Analytical Biochemistry	3
7317	Analytical Biotechnology	3
5669	Environmental Analytical Chemistry	3
5644	Principles and Analysis of Carbohydrates	3
5616	Protein Mass Spectrometry	3
	Inorganic and Materials Chemistry	
5646	Synthesis and Reactivity of Inorganic Compounds	3
7305	Special Topics Inorganic and Materials Chemistry	3
5696	Organometallic Chemistry	3
5687	Principles of Solid State Chemistry	3
5698	Physical Methods in Chemistry	3
	Organic Chemistry	
5626	Organic Synthesis I	3
5627	Mechanistic and Physical Organic Chemistry	3
5628	Spectroscopy of Organic Compounds	3
7310	Special Topics in Organic Chemistry	3
5672	Organic Synthesis II	3
5676	Bioorganic Chemistry	3
5645	Drug Discovery and Development	3
5625	Chemistry & Design of Protein Pharmaceuticals	3
5610	Polymer Chemistry	3
	Physical Chemistry	

7247	Advances in Nanomaterials	3
5638	Molecular Modeling	3
5636	Thermodynamics	3
5637	Foundations of Spectroscopy	3
5639	Chemical Kinetics	3
7320	Special Topics in Physical Chemistry	3
5686	Fundamentals Molecular Structure & Electronics	3
5688	Principles of Magnetic Resonance	3
5651	Materials Chemistry of Renewable Energy	3
	Chemical Biology	
5621	Chemical Biology for Chemists	3
5620	Protein Chemistry	3

D. Courses Beyond the Minimum Requirements

Students are only allowed to take additional coursework beyond the minimum number of courses required for the degree by special request from the research advisor. The advisor must email the rationale to the Academic Coordinator to ensure the tuition waiver can be applied. If the course is from outside the College of Science, approval must also be obtained by the Director of Graduate Studies.

E. Seminar

All full-time graduate students are required to attend departmental colloquia and graduate student seminars in each fall and spring semester while in the program. (PhD students - CHEM 8504 Seminar, MS students - CHEM 5904 Seminar.) All full-time graduate students are required to present a seminar during the first two years of study. In general, Ph.D. students present in fall of second year and M.S. students present in the spring semester of the second year. The seminar consists of a report of background for ongoing and future research. Ph.D. students are expected to give at least one additional seminar, with the presentation being a seminar describing their research accomplishments, to be presented in their final year. This final public seminar will generally be on the day of the Dissertation Defense immediately before the private defense portion. The student will be responsible for booking a room for the public seminar and the private defense, recognizing that they may want to schedule a larger room for the public seminar portion.

During the semester in which the student presents a seminar, a letter grade (A through C, or F) is given for CHEM 8504 or CHEM 5904. During all other semesters, a

grade of S or U (satisfactory or unsatisfactory) is issued. Unexcused absences from seminars will lower the student's grade for seminar for that term, and may result in a grade of unsatisfactory (U) or failure (F).

F. CHEM 5600 Research Skills and Ethics; and CHEM 7730 Advanced Laboratory Methods

The CHEM 5600 Research Skills and Ethics course is a required element for all full-time thesis M.S. and Ph.D. students. One of the aims of the course is to acquaint students with the purpose of the graduate school and the resources available to graduate students to assist them in making satisfactory progress toward their degree. Additional aims are to develop research and presentation skills, and to educate in regard to ethical standards. Students in the thesis M.S. and Ph.D. degree programs are normally expected to take this course during their first year (first summer) of residency. Prior to the summer course, students must register for CHEM 5599 Introduction to Research and Ethics in both fall and spring semesters. There will be some class meetings and assignments determined by the professor of the course during the fall and spring semesters. Course credit for this course does not count toward the semester hours of course credits required to be completed in chemistry courses numbered from CHEM 5601 through 7999 for the thesis M.S. and Ph.D. programs.

The CHEM 7730 Advanced Laboratory Methods class is required for Ph.D. students. Its goal is to familiarize students with research in the Department of Chemistry and Chemical Biology and methods used by the various research labs. Students take this course during their first year (first summer) of residency. Prior to the summer course, students must register for CHEM 5599, which is also a pre-requisite for CHEM 5600 taken during fall and spring of the first year. This pre-requisite course covers material for both Research Skills and Ethics and Advanced Laboratory Methods and class time is divided between the two courses. Course credit for CHEM 5599 does not count toward the semester hours of course credits required to be completed in chemistry courses numbered from CHEM 5601 through 7999 for the Ph.D. program.

G. Research

1. Selection of Ph.D. or M.S. Research Advisor

Research advisors for Ph.D. students are selected after a minimum of one six-week rotation in the fall of the first year, by mutual agreement between the student and the faculty member along with the concurrence of the Director of Graduate Studies and the Department Chair, representing the rest of the faculty. M.S. students do not need to do laboratory rotations, but will chose an advisor by mutual agreement between student and faculty, along with concurrence of the Department Chair. All new students in thesis programs are expected to formally select their research advisor by the end of their second semester of residence. This allows for an optional third laboratory rotation for Ph.D. students in the spring of the first year. The choice of a research advisor is a very important step in a student's graduate career since it will mold the student's interests and approach to science. This should be done only after careful consideration.

To help in this process, faculty present research seminars as part of CHEM 5599, the prerequisite for the CHEM 7730 Advanced Laboratory Methods, mostly during the fall of the first year. This is followed by a poster session scheduled for either late fall or early in the spring semester, presented by members of the various laboratories. Students must attend this poster session or any other events scheduled for this purpose. In addition, the student must make appointments and discuss individually with at least three faculty members regarding the type of research that is being done under that faculty member's direction.

Chemistry is no longer rigidly defined by the traditional areas of analytical, biochemistry, inorganic, organic and physical chemistry. The research of virtually every professor encompasses more than one area of research; the designation of analytical, biochemistry, etc. is merely organizational and historical. First year graduate students are strongly encouraged to speak with more than three potential advisors before finalizing their selection. Familiarity with research in the department in general will be of great value in generating ideas and utilizing the resources of the whole department. Specific problems that the student might investigate should also be explored with each faculty member. Before making a final choice, a student is encouraged to talk with other students and post-doctoral fellows working with a particular faculty member to

gain further insight into the research. The rotations are intended to facilitate this process.

The **Research Advisor Selection Form** (see appendix at end of this Guidebook) is used to indicate that the student has discussed research possibilities with at least three professors (signatures are required), the student's choice of a research advisor and his/her concurrence, the student's degree goals, the proposed funding plan approval by the Department Business Manager and the approval of the Department Chair. The Research Advisor Selection Form must be filed by the end of the spring semester of the first year with the Academic Coordinator, Tara Loschiavo. Upper-level graduate students must also file the Research Advisor Selection Form with the Academic Coordinator if there is a change in research advisor later on. Late changes in advisor tend to be disruptive to the student's progress and possibly to the research program of the advisor. Therefore, the Department Chair must approve any change of advisor.

2. Summer Financial Support for Students

Financial support will be recommended by the Department in the form of available Teaching Assistantships or Research Fellowships for all students originally admitted with TA support who are in good standing and who have successfully completed their first year of residence (see Section II.A.2).

3. Appointment of Research Committee

When a thesis student qualifies to continue M.S. or Ph.D. studies for the second year, a three- or four-person Research Committee is named by the student after consultation with the research advisor. This committee includes the research advisor and is chaired by a designated member of the committee who is another tenured or tenure-track faculty member of the Department of Chemistry and Chemical Biology (CCB) (see Section II.P.1). A third member of the committee must also be a tenured or tenure-track faculty with an appointment in CCB. If desired the committee can be expanded to four members to include one other Ph.D.-holding individual at Northeastern University, or from another institution (including Universities, government, or industry). The constitution of the initial Research Committee requires approval by the Director of

Graduate Studies. The Research Committee must be named, approved and submitted to the Academic Coordinator (who will obtain approval from Graduate Academic Standing Committee) in the fall of the second year. The Research Committee reviews the progress of the student at least annually, including for the second year proposal defense; see Section II.P.1 of this guidebook.

4. Appointment of Dissertation Committee. For the final Ph.D. thesis defense, a committee is named by the student, with the advice of the research advisor and one additional member is added to the Research committee, who must be a tenured or tenure-track faculty or equivalent at an institution (academic, industry, or government) other than Northeastern University (outside member). Membership on this committee may include members of the student's Research Committee. This final committee of at least 4 members becomes the Dissertation Committee upon the approval of Faculty members with tenure locus in the Department.

H. Students Requiring Remediation or Training in the English Language

Some entering students are not able to pursue the normal program because (1) they have undergraduate deficiencies or (2) are restricted by the English Language Center to a one or two course limit for one or more semesters.

1. Remediation

The student, the academic advisor, and the graduate coordinator determine what, if any, remediation is needed on a case-by-case basis. A GPA of 3.00 in all courses taken by the end of the spring semester of the first year, will be required in order for the student to continue into the next year of the program.

2. Students Requiring Training in the English Language

International students who are required to participate in the programs of the English Language Center may have restrictions placed on the number of academic courses normally taken each semester. Such students will be required to achieve a minimum GPA of 3.00 in their academic courses by the end of the spring semester of their first year of residence in order to continue in the program.

Students requiring extensive remediation or training in the English Language Center might not complete the minimum of 5 graduate courses after 2 semesters of residence. All such students will have their status (Ph.D. or M.S.) determined after the semester in which their fifth course is completed.

I. Students Entering with a Master's Degree

Students entering the Ph.D. thesis program who already have a master's degree from a country outside the U.S. are still treated as first year students with a B.S. unless otherwise decided by the student in consultation with the Director of Graduate Studies. This policy has been adopted because the methods of training elsewhere are frequently sufficiently different from those prevailing in the United States that these master's degree students have found it best to take all the courses of a first year student coming in with an undergraduate degree.

However, if the M.S. is in Chemistry and from a U.S. institution, or it is decided that the previous international M.S. training received by the student is adequate, the student can proceed directly to research and will take the cumulative examinations in the summer after their first year. A formal petition to the Departmental Graduate Committee is required for this purpose for international students, or for domestic students if the M.S. is not in Chemistry but in a closely related field. If approved, a memo will then be sent to the College of Science Director of Student Services as soon as possible containing the Department's recommendation that the student's Master's degree be regarded as equivalent to the M.S. in Chemistry from Northeastern University.

The only formal course requirements for students entering with an approved M.S. are 6 semester hours of Chemistry or other approved graduate courses, plus the requirement of a seminar presentation in CHEM 8504. The 6 semester hours must include CHEM 5600 Research Skills and Ethics (and 2 semesters of CHEM 5599 as a prerequisite), if an equivalent course has not been taken at the previous institution. In order to maintain full-time status, a student may need to sign up for CHEM 9986 Research, (or another course that confers full-time status—see section 1.F) each semester until officially becoming doctoral candidates by completing the coursework, including the proposal defense, and the cumulative examinations are passed.

J. Research Courses

After the first two semesters, the programs followed by students in the full-time thesis M.S. and Ph.D. tracks differ considerably.

1. CHEM 8984 & 8986 M.S. Research

The M.S. student must concentrate on finishing up the required coursework, carrying out research and completing the M.S. thesis by the end of the spring semester of the second year. If the student is in the M.S. program at the end of the first two semesters, a minimum of 10 semester hours of CHEM 8984 M.S. Research must be completed, and only 10 SH will count toward the degree credit hour requirements. If the student changes from the Ph.D. program to the M.S. program at the end of the first summer, the equivalent 10 SH can be achieved by the combination of 6 SH of CHEM 8984 and 4 SH of CHEM 7730 Advanced Laboratory Methods (having taken the prerequisite CHEM 5599. The course number for M.S. Research is CHEM 5984 and can be registered for 1-4 SH. CHEM 8986 is for 0 credit hours, and can be used when a student no longer needs the credit hours.

Ph.D. students take 4 SH of Research (CHEM 8984) in the fall semester of the second year as part of the qualification for Ph.D. candidacy.

2. CHEM 9986 Research

CHEM 9986 Research must be used for registration in each semester after the required amount of Research credit from CHEM 8986 (MS students) or CHEM 8984 (Ph.D. Students) is obtained, until doctoral candidacy is established (completion of coursework and passing of the cumulative exams) or the M.S. thesis is completed, approved, and submitted. This course will give graduate students full-time status in the program.

3. CHEM 9990 Dissertation

Doctoral candidates must register for CHEM 9990 Dissertation, for two consecutive semesters commencing after the time when Ph.D. Candidacy is established. (This is typically during the spring semester of the second year and fall of the third year.)

4. CHEM 9996 Dissertation Continuation

CHEM 9996 Dissertation Continuation is used each semester after Doctoral Candidates have registered in two consecutive semesters for CHEM 9990 Dissertation.

Doctoral Candidates must maintain continuous registration using CHEM 9996, Dissertation Continuation, until they have passed the final oral examination on their dissertation and their Ph.D. thesis is approved, signed, and submitted. PhD students must be registered for CHEM 9996 during the semester they defend their dissertations.

K. Cumulative (Qualifying) Examinations

1. General Regulations

An important requirement for Ph.D. candidacy is passing the cumulative examinations. These consist of a series of five exams. Only one series of examinations will be given in any one year, typically in the summer. Students must take and pass the qualifying examinations at the first opportunity after they are eligible to take the exams.

Examinations will be offered in the areas of analytical, physical/materials, bio-organic/medicinal chemistry, and chemical biology. Full-time faculty representing those fields will administer the exams. The cumulative exams constitute part of the Ph.D. qualifying examinations of the general graduate regulations and may only be taken by doctoral students. A student may take the cumulative exam series only once. Three passing grades satisfy the cumulative requirement. Once a cumulative exam series is started, every exam in that series must be taken until three exams have been passed or three exams have been failed. Skipped exams will be considered as failures. The only exception permitted is for illness, and requires the approval of the Departmental Graduate Academic Standing Committee.

Students planning on taking the cumulative exams must register for CHEM 9000, PhD Qualifying Exam Preparation. This is a zero credit hour course that will allow students to be recognized as full-time students even if they are not registered for any other course. The course will be graded on a satisfactory/unsatisfactory basis, S/U, depending on whether the exam series is successfully passed (S) or failed (U).

A schedule of exams will be announced in advance. Exams from all four areas will be available for each of the exam days. The necessary three passing performances on exams may include exams from areas outside the field of the student's principal specialty. The subject matter of each exam is at the discretion of the faculty member who prepares the exam. An exam may cover a general area or it may have a specific topic. The nature of the exam and the specific topic, if applicable, will typically be

announced approximately one week in advance of the exam date. Students must select the exam that they will take and notify the Academic Coordinator of their choice a week prior to the exam. Exams with a specific topic may focus on a particular sub-area or a set of literature references, but as these are cumulative exams, the questions do not have to be narrowly restricted to the topic. Exams are intended to be finished within 2 to 3 hours with some exams taking longer than others. Exams will typically consist of essay questions and/or problems to be solved, not multiple choice or true/false questions. Exams will utilize a number system, to allow students to take the exams anonymously.

The cumulative exams are intended to evaluate the level of knowledge, preparation, analytic skills, and abilities considered appropriate for a student at the Ph.D. level. This standard requires a performance at least at the equivalent of a grade level of B or higher in graduate coursework. Each cumulative exam will be graded by the faculty member administering the exam without the assistance of other faculty or students. Students will be given a grade of Pass (P) or Fail (U). Faculty members are strongly encouraged to provide markings or corrections on student exam papers, or provide an answer key, so that students can understand their performance. Either the original or a copy of the exam paper should be returned to the student for review, and the faculty member should retain a copy or the original until the entire exam series is over.

If a student believes that an exam was graded improperly, the student must first attempt to resolve the dispute by consulting with the faculty member who administered the exam. An appeal is possible, but students must understand that a matter of judgment by the professor in grading is unlikely to be overturned. However, a student who thinks that there was impropriety or unfairness involved in the grading may appeal on such grounds by written petition to the Graduate Committee of the Department, which will attempt to resolve the dispute in a timely manner, generally within two weeks. Students who have filed an appeal are advised to prepare and take subsequent cumulative examinations while waiting for the results of their appeal.

2. Eligibility Requirements

A student is eligible to take the cumulative examinations only if enrolled in the Ph.D program or in the Industry Entry Ph.D. program and has satisfied one of the

following options:

a. The student has entered with a bachelor's degree, has achieved a satisfactory performance through the first 2 semesters of residence (see II.A.2), and has a minimum GPA of 3.00 at the time of the exam series.

b. The student has been admitted to the doctoral program with an approved master's degree. (See Section II.I.)

L. Time Limits for Degrees and University Financial Support

The primary purpose of time limit regulations is to aid students in finishing their degrees in a timely fashion so that they can begin their professional careers. Besides the obvious benefits to the student, timely finishing of degrees enables the Department to utilize its financial, space and personnel resources more efficiently. The College of Science has some general regulations governing the length of time a student may continue in graduate programs. Because a student must be in good academic standing to receive any type of University financial assistance, these College regulations must always be observed. They are listed below.

1. General College of Science Regulations

a. Course credits earned in the program of graduate study or accepted by transfer are valid for a maximum of seven years, unless an extension is granted by the Graduate Student Services Director of the College of Science. Students should petition, in writing, through their Department to the College of Science for such extensions.

b. After the establishment of degree candidacy, a **maximum of five years** will be allowed for the completion of degree requirements. Formal degree candidacy is established when students have completed coursework requirements (see Section II.B) or have had an earned Master's degree accepted by the Department (see Section II.I), have passed the qualifying examination and the thesis proposal defense (see Section II.K), and in all cases have been certified by the Graduate Student Services Director of the College of Science.

2. Source of Support

The time limitations apply equally, regardless of the source of support, since the nature of the support does not affect any of the purposes for imposing time limitations. This applies to RAs, TAs, and any stipended fellowship as sources of support.

3. Terminal M.S. Program

Students who are enrolled in the terminal M.S. degree program in chemistry at the end of their first 2 semesters of study will be expected to complete all the requirements for the master's degree by the end of the spring semester of their second year. Students in the M.S. program will not normally receive University financial support in the form of TA and will not be entitled to any form of University financial support beyond the spring semester of their second year of study.

4. Ph.D. Students Who Fail the Cumulative Exams

Students who entered the Ph.D. program with a baccalaureate degree, or who waived their M.S. degree, and who do not pass the cumulative exam series will be expected to complete all the requirements for the M.S. degree in chemistry by the end of the spring semester of their second year of study. Students in the M.S. program will not normally receive University financial support in the form of TA and will not be entitled to any form of University financial support beyond the spring semester of their second year of study.

Students who entered the Ph.D. program with an M.S. degree that was approved as equivalent to an M.S. from Northeastern (see Section II.I) and who fail to pass the cumulative exam series by the beginning of their second year of residence (i.e. during the summer after their first year) will not be further supported, effective the end of the Summer Terms. The Graduate Academic Standing Committee of the Department may decide that such a student has not made satisfactory progress toward a degree and is terminated from the Ph.D. program.

5. Ph.D. Program

a. Students entering with a B.S. or a waived M.S. degree, or who are admitted into the Ph.D. program after completing an M.S. degree are eligible to

receive full support through the spring semester of the fifth year following their initial full-time entry into the graduate program, provided they are in continuous residence during that period.

By the end of the student's seventh year, there will be an absolute cutoff of financial support and the seven-year University time limit rule would be used normally to terminate the student from the graduate program (see Section II.L.1).

b. Students entering with an un-waived M.S. degree are eligible to receive full support through the spring semester of the fourth year that follows their full-time entry.

Extensions of support are handled in the same way as for students entering with a B.S., described above. The five-year University time limit rule after establishment of Ph.D. candidacy would be used normally to terminate the student from the graduate program after the 6th year.

c. Students entering with credits between a B.S. and a M.S. degree, such as students admitted from the part-time program, will have their time limits set between 4 and 5 years by the Academic Standing Committee at the time of their entry into the full-time thesis program.

d. M.S. students who apply for admission to the Ph.D. program will be expected to complete their M.S. thesis within the time limitations that apply to all M.S. candidates and will not be supported beyond the spring semester of their second year for the purpose of completing M.S. requirements.

e. Students who are admitted into the Ph.D. program after completing an M.S. thesis will still be expected to complete their Ph.D. requirements within the above stated time limits for Ph.D. students and will not be eligible for support as TAs beyond those specified time limitations.

M. Departmental Policies on TA Awards

1. Students Admitted with TA Support

Students who are originally admitted with TA support will be recommended for continuation of support up to the maximum period of eligibility dictated by their particular degree track, as long as they remain in good standing and their TA duties are performed satisfactorily. The eligibility limitations are specified in the preceding Section

(II.L) "Time Limits for University Financial Support". Students in the M.S. program are not eligible for TA support.

2. Students Admitted without TA Support

Students who are originally admitted without TA support may be awarded TA positions if any become available during their tenure in the Department. Such appointments will be subject to the following limitations:

a. During the student's first year, available TA appointments will be recommended on a term-by-term basis for those individuals who have demonstrated to the Departmental Graduate Academic Standing Committee the best combination of high academic performance, English communication skills and, when appropriate, previous TA performance.

b. During the spring semester of their first year, students originally admitted without TA support may apply to the Departmental Graduate Academic Standing Committee to be recommended for a regular TA award for subsequent years. The Department may decide to continue the original status or make a regular award.

N. Residence Requirement

The residence requirement is satisfied after one year of full-time graduate work or two years of half-time work.

O. Research and Dissertation Committees

1. Three-person Research Committee and Annual Review

After a student has selected a research advisor and attained M.S. or Ph.D. student status (see Section II.A), a three-person Research Committee (recorded in the Appointment Form) is named by the student, in consultation with the research advisor. This committee includes the research advisor but is chaired by another member of the committee who is also a tenured or tenure-track faculty in the Department of Chemistry and Chemical Biology. (See Section II.G). The constitution of this committee requires approval by the Chair of the Graduate Committee. The Research Committee must be named, approved, and the Research Committee Appointment Form filed with the

Academic Administrator by the last day of the fall semester of the second year before students will be allowed to register for the next term.

In the case of the M.S. candidate, this committee constitutes the readers of the thesis. There is no departmental requirement for an oral examination for the M.S. degree. The Thesis Committee may be convened periodically at the discretion of the research advisor prior to the submission of the M.S. thesis.

The Ph.D. candidate must present research progress to the Research Committee during a formal annual Research Committee meeting, beginning in the student's second year. The Research Committee members will evaluate the progress toward completion of the Ph.D. thesis and will complete the Report of Graduate Student Research Progress (see appendix), which must be submitted to the Academic Coordinator by the first day of Summer I in order for the student to be eligible to receive financial support in the fall semester and be able to register for courses each year.

2. Dissertation Committee

For the final Ph.D. thesis defense, a committee is named jointly by the student and research advisor. The dissertation committee must have at least four members, including three Northeastern Chemistry tenured or tenure-track faculty and one additional member, who must be a tenured or tenure-track faculty or equivalent at an institution (academic, industry, or government) other than Northeastern University (outside member). The membership of this committee may include members of the student's Research Committee. This final committee becomes the Dissertation Committee upon the approval of Faculty members with tenure locus in the Department.

Since the Dissertation Committee must be approved by vote of the Department (College of Science regulation), the proposed list of the Committee membership must be circulated by the Academic Coordinator for faculty approval. Departmental approval must be obtained at least one month before the examination is to be held. Students send the list of committee members (and appointments in case of members external to the Department) to the Academic Coordinator via email at least 30 days ahead of the defense date. In the case of the inability of an approved Committee member to serve, an appropriate substitute must be appointed. If this necessity arises during the regular academic year, Departmental approval must be obtained.

If it occurs during the summer, the substitution must have the approval of the Department Chair.

An advance copy of the thesis must be circulated to the Dissertation Committee for its approval prior to the preparation of the final copy. This regulation may be waived upon agreement between the research advisor and the members of the Dissertation Committee. The final copy will then be circulated to the full Thesis Committee at least 2 weeks prior to the date of the thesis defense. Since the Thesis Defense is open to the public, the time and place where it is to be held must be announced to the Department, via memo, 2 weeks in advance. Students must distribute the dissertation abstract, time, date and location to the department at least two weeks in advance of the scheduled Thesis Defense date. The Thesis Defense must be held at least 2 weeks before the degree is to be conferred (College of Science regulation).

P. Format and Submission of Thesis

Students preparing an M.S. or Ph.D. thesis should consult the latest version of the Thesis and Dissertation Guidelines published by the College of Science and available on the College of Science Graduate Student Support Blackboard site (GRADCOS, http://northeastern.blackboard.com). It is extremely important to follow the current thesis formatting guidelines before it is submitted to the members of the departmental Thesis Committee, although the committee may ask for changes and corrections. The signature pages for a Ph.D. thesis should be available in correct format on the Graduate Approval Record Form (available on above website). Students are also encouraged to consult the library archives staff to ensure that their figures, etc., meet library guidelines. Students must schedule an appointment with the Director of the College of Science Graduate Student Services Department and have the final copy of their thesis approved. Those who wish to participate in the spring graduation exercises are strongly encouraged to pay particular attention to the COS deadlines for submission of the thesis that are also published on the COS website.

Q. Clearance for Graduation

The last step before graduation is that the Academic Coordinator must complete and sign a clearance form indicating the fulfillment of all requirements. Students anticipating completion of their graduate program are strongly advised to complete the form in consultation

with the Coordinator, *well in advance (typically before beginning of the last semester)* to make sure that they have fulfilled all requirements and to ensure a timely graduation.

Appendix

Campus Resources

Research Advisor Selection Form

Thesis Committee Appointment Form

Report of Graduate Student Research Progress

CAMPUS RESOURCES

Campus emergency 617-373-3333

Campus police/non-emergency 617-373-2121

Ph.D. Network https://phd.northeastern.edu/network/resources/

Care.com Backup caregiving https://nugrad.care.com/

Career Services https://www.northeastern.edu/careers/services/graduate-students/
careerservices@neu.edu, 671-373-2430

Center for Advancing Teaching and Learning through Research
https://www.northeastern.edu/learningresearch/grads/

Environmental Health and Safety www.northeastern.edu/ehs

Graduate Student Government https://www.northeastern.edu/gsg/

Office of Institutional Diversity and Inclusion http://www.northeastern.edu/oidi/

Office of Global Services https://www.northeastern.edu/ogs/

Office of Student Conduct and Conflict Resolution
http://www.northeastern.edu/osccr/

Title IX (prohibits discrimination based on gender) http://www.northeastern.edu/titleix/

University Health and Counseling Service https://www.northeastern.edu/uhcs/
617-373-2772, First floor, Forsyth Building

WeCare (student support in times of difficulty or crisis)
http://www.northeastern.edu/wecare/
wecare@neu.edu, 617-373-4384

RESEARCH ADVISOR SELECTION FORM

TO: First Year Graduate Students
FROM: Michael Pollastri, Chair
SUBJECT: Choice of Advisor and Thesis Problem Degree Goals

Please use this two-page form to indicate your choice of a research advisor and his/her concurrence, and your degree goals. Students must first discuss research opportunities with at least three professors before the final selection of an advisor; signatures of the three professors must be obtained on the form below. First-year students must complete the selection process and return this form before the end of the Spring Semester. Please return the completed form to the Academic Coordinator.

The undersigned acknowledge that _____ (student's printed name) has spoken with us about opportunities for graduate research:

Faculty Signatures:

Name:	Signature:	Date:
Name:	Signature:	Date:
Name:	Signature:	Date:

Brief description of proposed research project and title:

_____
_____

M.S. only _____
M.S. Program followed by Ph.D. _____
Ph.D. only _____

Student's Name (print) _____

Student's Signature _____Date:_____

Advisor's Name (print) _____

Advisor's Signature _____Date:_____

Complete Co-Advisor Section if applicable:

Co-Advisor's Name (print)_____

Co-Advisor's Signature _____Date:_____

Proposed funding for student:

Options (choose one or more):

1). RA award – please provide the budget number

2). Start-up TA – please provide a copy of your offer letter by e-mail

3). Pending RA award – please provide a copy of the Notice of Grant Award and UPAF budget number

4). Endowment – please provide budget number and proof of projected interest

5). Fellowship – please provide a copy of the Notice of Grant Award and UPAF budget number

6). Provost sponsored RA – please provide contact information for the Provost's Office

7). Co-Op – please provide employer name

8). Non-Chemistry RA – please provide the contact name of the person who will submit the award

9). College sponsored RA/TA – please provide the contact name of the person authorizing the funding

10). Other – requires the approval of the Chair

Year 1 -
Year 2 -
Year 3 -
Year 4 -
Year 5 -

Proposal review completed by Richard Pumphrey:
_____ Date_____

(The signature of Richard Pumphrey is required **before** the Chair can sign)

Chair approval: _____ Date:_____

Revised November 10, 2017

Department of Chemistry and Chemical Biology

RESEARCH COMMITTEE APPOINTMENT FORM

When a thesis student qualifies to continue M. S. or Ph.D. studies for the second year, i.e., when a minimum of five courses have been completed after two semesters of residence with an average grade of ≥ 2.70 or ≥ 3.00, respectively, a three-person Thesis Committee is named. This committee includes the research advisor and is chaired by a member of the faculty other than the advisor. The constitution of the committee requires approval by the Chair of the Graduate Academic Standing Committee. *The thesis Committee must be named and approved in the fall of the second year.*

Name:	Signature:	Date:
Student		
Advisor		
Committee Chair		
Third Committee Member		
Fourth Committee Member (Industry Entry Ph.D. company supervisor)		
Chair, Graduate Academic Standing Committee		

THESIS COMMITTEE PROGRESS REPORT FORM

Complete the sections <u>in bold</u> on both pages below and bring this form to your committee.

Student Name: _____ **Entry Year:** _____

Date of this review: _____ **Date of last review:** _____

Advisor: _____

Research Committee Chair (if not advisor): _____

Research Committee Other Member(s): _____

List any key achievements, problems with, and any changes to your thesis project(s).

(Please consider goals outlined in any previous reports)

A committee meeting should be held in _____ (semester) of _____ (year).

Expected graduation date: _____ (semester) of _____ (year).

Key goals	Estimated time to achieve	Committee's comments
1.		**1.**
2.		**2.**
3.		**3.**
4.		**4.**
5.		**5.**

Status of Publication(s):

Briefly describe your plans and preparation for your postgraduate career:

_____ Check here to request a meeting with your committee.

Signatures:

Student:_____

Advisor:_____

Committee Chair (if not advisor): _____

Committee Member: _____