

Graduate Student Policies for MS and PhD Programs in Biochemistry

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History:

Adopted:	October, 1992
Revised:	August, 1995
Revised:	August, 1997
Revised Dept Name:	April, 2009
Updated:	January, 2011
Revised:	February 10, 2011
Revised:	December 14, 2011
Revised:	November 21, 2012
Revised:	February 6, 2013
Revised:	March 12, 2014
Revised:	March 18, 2015
Revised:	January 11, 2017
Revised:	May 9, 2017
Revised:	October 14, 2018

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1. General Information

Master of Science (MS) and Doctor of Philosophy (PhD) degrees in Biochemistry can be earned by graduate students in the Department of Chemistry and Biochemistry (hereinafter abbreviated C&B). The purpose of this document is to present the academic and research requirements as well as the procedural regulations of the NDSU Graduate School and for MS and PhD degrees in Biochemistry.

Student progress toward the MS or PhD Degree in Biochemistry is monitored throughout the student's tenure by the Department of C&B's Graduate Student Progress Committee (hereinafter designated GSPC). The GSPC functions as the Graduate Program Supervisory Committee until a student's Advisory and Examination (A&E) Committee has been established and approved by the Dean of the Graduate School. The GSPC comprises one representative from each major area of study in the Department of C&B. The GSPC will notify students annually of their status with regard to the degree requirements in an effort to help them stay on the appropriate time line, which is set forth herein and summarized in sections 19 and 20.

Deviation from the regulations set forth in this document may be requested by the graduate student via a written petition to the Department Chair, with a copy to the GSPC Chair. If an A&E Committee has been approved by the Graduate Dean, the petition should first be discussed at a meeting of the student's A&E Committee, and a recommendation from the Chair of that Committee should also be sent to the Department Chair.

2. Admission Classifications for Graduate Students

Graduate students may be admitted under one of the following classifications:

- Full Graduate Standing. These students have met the admission requirements for both the Department and the Graduate School.
- Conditional Graduate Standing. These students do not meet all admission requirements (*e.g.*, undergraduate GPA of 3.0), but they show potential for successful graduate study.

A student who is admitted with conditional graduate standing should apply for reclassification before the twelfth graduate credit is earned. Students should refer to the Graduate School web site for the reclassification form. A student can neither have a program of study approved, nor become a candidate for a graduate degree until they have achieved full graduate standing. Eligibility for graduate assistantships will be determined by the Department, contingent upon approval by the Dean of the Graduate School.

3. Scholarship Standards for NDSU Graduate Students

In fulfilling graduate course requirements on any Plan of Study, only grades of A, B, or C are acceptable. For Master's Thesis (798) or Doctoral Dissertation (899), which are

evaluated as "Satisfactory" (S) or "Unsatisfactory" (U), only the grade of S is acceptable. For Seminar (790), only grades of A, B, C, or S are acceptable for graduate credit.

All courses evaluated by the grades A, B, C, D, or F are used in calculating the grade point average (GPA.) If a course has been repeated, both grades will appear on the transcript, but only the second grade will be used in calculation of the GPA. A specific course can be retaken only once, and a maximum of three courses may be retaken.

While some graduate courses may count for graduate credit with a grade of C, more than two grades of C or below may be grounds for dismissal from the program if the students A&E Committee and the Department Chair are in agreement.

In order to maintain Good Graduate Standing and to receive a graduate degree, a student must maintain a cumulative GPA of at least 3.0.

Any student in Good Graduate Standing whose cumulative GPA drops to less than 3.0 at any time during their tenure is automatically placed on academic warning. Any student admitted with Conditional Graduate Standing because of a GPA deficiency is subject to dismissal from the program if their first-semester GPA is less than 3.0. A student on academic warning who fails to achieve a cumulative GPA of at least 3.0 by the end of the subsequent semester of enrollment will be placed on academic probation.

A student on academic probation may not continue in their graduate degree program without a waiver from the Dean of the Graduate School, pursuant to a recommendation from the Department Chair. This recommendation must include a review of the student's status and a proposed recovery plan that will assist in the student's return to Good Graduate Standing within the following semester. If the cumulative GPA is not at least 3.0 after an additional semester, the student in question will be dismissed from the graduate program.

A student on academic probation is ineligible for the tuition waiver and may be ineligible for a graduate assistantship. International students should be advised that loss of their assistantship may impact their U.S. Visa status.

4. Academic Evaluation Test and Initial Academic Advising

During the week preceding registration, all new graduate students are required to take an Academic Evaluation Test (AET) covering undergraduate subject material in Analytical, Inorganic, Organic, and Physical Chemistry, as well as in Biochemistry and Molecular Biology (a total of six subject sections). These examinations consist of twenty (20) multiple choice questions for each subject section. The exams are written such that students with a reasonable command of skills and concepts presented in a typical undergraduate chemistry and biochemistry curriculum should be able to pass them. The results of these examinations will be used in conjunction with other information concerning the student's background to assess any deficiencies in their chemical and

biochemical knowledge base. A copy of those results will be placed in the student's file. Any student holding a Master's Degree from an American or Canadian University may be excused from the AET based on graduate course work in these areas. Requests for such special consideration must be submitted in writing to the Department Chair with a copy to the GSPC Chair.

Students are required to pass three (3) of six (6) subject sections of the AET with scores of $\geq 70\%$ by the end of the first academic year (second semester). One of the three sections must be outside the student's primary discipline. In other words, biochemistry students must pass both the biochemistry and molecular biology AETs as well as one of the four chemistry AETs. The AET will be administered by the GSPC three times during the academic year (August, January and May). Students may attempt to satisfy this requirement any time during the first academic year when the AET is offered. Receiving a grade of at least a B in the following courses will also satisfy as a pass of the corresponding AET subject:

AET Subject	Course Number
Organic Chemistry	CHEM 341 or 741
Inorganic Chemistry	CHEM 625 or 725
Analytical Chemistry	CHEM 632 or 732
Physical Chemistry	BIOC 665 or 759
Biochemistry	BIOC 660 or 701
Molecular Biology	BIOC 674

Failure to pass three of six sections (vide supra) by the end of the second semester will result in the GSPC defining this as a deficiency and adjusting the student's Plan of Study accordingly.

Prior to registering for the first semester of courses, each new student will meet with the Graduate Student Progress Committee for academic advising. The GSPC will recommend a program of study for the first academic year based upon:

- performance on the Academic Evaluation Test,
- previous academic record, and
- a personal interview with the student.

The GSPC may recommend that a student register for an undergraduate course, either as an unregistered audit, or for credit. If an unregistered audit is recommended, then the student will be required to:

- attend lectures regularly,
- take all examinations in the course, and
- earn a grade of at least B for the course.

A memo from the instructor indicating the student's final letter grade will be placed in the student's file.

In the case of an equivocal deficiency, other approaches are possible. For example, the student could either enroll in a graduate course in their area of deficiency and earn a grade of B or better, or test out of the course. As such methods are considerably more demanding on the first-year graduate student, they are seldom recommended.

While it is desirable to remove deficiencies during the first year of graduate study, scheduling of certain courses may require that the time be extended to a second year. The assessment of whether or not a student has in fact removed a deficiency must be discussed at the student's first A&E Committee meeting and underscores the importance of such meetings. It is the responsibility of this Committee to decide whether deficiencies have been removed, and it is their prerogative to postpone advancement to candidacy or conferral of a degree if all deficiencies have not been removed.

Students must recognize that graduate courses are taught with the assumption that all those enrolled have the appropriate background to succeed in the course. Any student who enrolls in a graduate course for which the prerequisite overlaps with one or more demonstrated, unresolved deficiencies should understand that it is their responsibility to gain command of the requisite background concepts such that they can keep up with the course

5. Credit Load

Under North Dakota State Board of Higher Education policy, a nine-credit academic schedule is considered to be a full-time load for graduate students who do not hold assistantships. Students holding a normal, $\frac{1}{2}$ -full-time equivalent (FTE) teaching or research assistantship and carrying five or more credits are considered full-time students. Graduate teaching and research assistants on these regular appointments should register every semester, including the summer session, for a minimum of five credits comprising didactic courses, research, and seminar. Graduate assistants on other percentage appointments would adjust their academic load accordingly. Graduate Assistants wishing to register for more than ten academic credits in a regular semester shall secure the approval of the Department Chair, and the Graduate Dean before registering.

For international students to maintain proper immigration status, six credits are required if the student holds a $\frac{1}{2}$ -FTE assistantship. Only when all courses are completed may international students register for fewer than six research credits to maintain proper immigration status.

6. Thesis Advisor and the Advisory and Examination Committee

By the end of the first semester in residence each graduate student should choose a thesis advisor upon mutual agreement with said advisor. In making this decision, the student is responsible for becoming familiar with the research interests of the various faculty members. This agreement should be conveyed, for final approval, to the Department Chair using the Departmental Mentor Form, which may be found in

electronic format on the C&B web site. The GSPC Chair should receive a copy of this form.

Before the end of the second semester of enrollment, the student, in consultation with his or her major advisor, will establish an Advisory and Examination (A&E) Committee. Until such time, the Graduate Student Progress Committee will fulfill the advisory role. The A&E Committee will be responsible for advising the student in preparing a Plan of Study, reviewing the student's progress at least annually, and administering the comprehensive and other oral examinations.

The A&E Committee will consist of at least three members of the NDSU graduate faculty. The major advisor will serve as the chair of the student's A&E Committee. The major advisor and student shall agree upon three additional Committee members:

- one from the student's area of specialization, typically from C&B
- a second from the Department of C&B, and
- one from outside the Department of C&B, subject to approval by the Graduate Dean.

Additional committee members having expertise in the student's research area may also be appointed. These additional members need not be members of the NDSU graduate faculty.

The A&E Committee, agreed upon by the thesis advisor and student and approved by the Department Chair and the academic Dean (College of Science and Mathematics), shall be recommended to the Dean of the Graduate School for approval and formal appointment. Once the Committee has been constituted, each member shall have an equal voice in Committee recommendations and equal vote in Committee decisions.

7. Annual Meetings and Progress in MS and PhD Programs

The A&E Committee will meet with and evaluate the student's progress annually on the basis of the following criteria:

- removal of academic deficiencies,
- maintenance of a 3.0 overall GPA as specified by the Graduate School Regulations,
- performance on the written comprehensive examination, i.e. the Maxi proposal,
- performance on the oral comprehensive examination,
- progress toward completion of the Plan of Study,
- progress in thesis research, and
- performance in and attendance at departmental seminars.

The first A&E Committee meeting should be held before the end of the second semester in residence. This meeting should set up a plan to address any remaining areas identified as deficiencies that were identified by the initial AET and approve the

student's Plan of Study. The student must convene a meeting of the A&E Committee at least once each year throughout his or her tenure as a graduate student. Refer to the Appendix for further information.

On the basis of subsequent annual meetings, the A&E Committee will communicate one of the following recommendations to the student:

- If academic and research progress have been satisfactory, continue toward an advanced degree in the present program of study.
- If the student has embarked on a PhD program and progress has been marginal in one or more respects, the Committee may request that the student complete the requirements for the MS degree before continuing.
- If progress has been unsatisfactory in the chosen degree program, the Committee may recommend termination of the student's Plan of Study.

The Chair of the A&E Committee will report the results of the Committee's deliberations using the form available on the Departmental website.

A student on the PhD track who fails to pass both the written and oral parts of the comprehensive examination will be transferred into the MS track. In this scenario, the student's program of study terminates with a MS Degree.

Any student in the MS track (due to either the student's original selection of this degree program, or to action of the A&E Committee) may, upon successful completion of the MS degree, and with the approval of the student's A&E Committee and the Department Chair, enter or re-enter the PhD track. All graduate level courses, and the AET, will count towards the PhD Program. Any student receiving a Master's Degree in the Department and continuing on for a PhD must meet the AET requirement by the end of the second semester after entering the PhD track. The student must pass both the written and oral components of the comprehensive exam (*vide infra*) by the end of the sixth semester after entering the PhD track.

Any decision made by the student's A&E Committee may be appealed first to the Department Chair, who will consult with the Graduate Student Progress Committee. If the student feels that fairness has not been served by this first appeal, a second appeal may be made to the Dean of the Graduate School.

The GSPC will periodically review the files of all graduate students and inform the Department Chair of students who are not in compliance with graduate regulations (*vide infra*). The chair of the Department of C&B will issue a warning and give the student one semester to bring themselves into compliance. If the student remains non-compliant at the end of that semester, then the student's assistantship will be reduced to $\frac{1}{4}$ FTE. If at the end of the next semester the deficiency remains, then the student's stipend will be withdrawn. This policy applies to the following regulations: (i) annual A&E Committee meetings, (ii) Plan of Study, (iii) required seminars, (iv) mini-proposals, (v) written comprehensive examination and (vi) Defense of an Original Proposal (Oral

Comprehensive Exam). International students should be advised that reduction and/or loss of stipend may impact their U.S. Visa status.

8. Plan of Study

The graduate student, in consultation with their A&E Committee, must file a Plan of Study with the Graduate School before the end of the second semester in residence. If for any reason the student is ineligible to file a Plan of Study with the Graduate School (e.g., the student has been placed on probation), the student must file an unofficial Plan of Study with the GSPC.

The Plan of Study shall be appropriate to meet the interest and needs of the student's chosen field, as determined by the A&E Committee and approved by the Department Chair and the Dean of the Graduate School. The Plan of Study becomes official only after all approvals have been made.

A maximum of 12 credits may be transferred from another institution via the petition process into a student's Plan of Study. The Graduate School specifies that all transfer credits must: (i) have been earned from a U.S. or Canadian institution that is accredited to offer graduate courses and degrees (credits from international institutions are transferable only after examination and approval by the A&E Committee, the GSPC and the Department Chair), (ii) carry grades of A or B, (iii) have been earned within a ten year period at the time of the final examination, (iv) be clearly graduate level (credit from courses listed in both graduate and undergraduate curricula are not transferable), (v) not be from continuing education, correspondence, extension, or workshop courses, (vi) not be from internship, individual study, special problem, or research disquisition courses, or courses graded pass/fail or Satisfactory/Unsatisfactory, (vii) not have been used to fulfill the requirements of a baccalaureate degree, (viii) be verified by an official transcript, and (ix) not be used in calculation of the NDSU graduate grade point average.

The Plan of Study may be revised as necessary. Revisions must follow the same approval process as the original Plan of Study. If revisions occur prior to the oral comprehensive exam, the revised Plan of Study must be submitted for approval by the end of the third week of September of the fifth semester (*i.e.*, fall semester of the third year) in residence. This revised Plan of Study, the proposal topic and content, and fundamental principles, concepts, and knowledge base applicable to a particular discipline will be the basis for the oral comprehensive exam and defense of an original proposal (Section 11).

9. Curricular Guidelines

Candidates for the PhD degree are required to earn at least 90 semester credits, which can include credits for seminar and research. No fewer than 27 of these 90 semester credits shall be earned in courses carrying graduate credit (courses numbered 601 to 789), and of these 27 credits, a minimum of 20 must be from courses numbered

701 to 789. Of these 20 credits, the requirement is 8 total credits in at least two fields of study other than the major area, selected from:

- Chemistry
- Biology
- Pharmacy
- Materials & Nanotechnology
- Coatings and Polymeric Materials
- Microbiology
- Other related area (e.g., Physics, Math, Engineering)

As part of total semester credits, the following departmental courses are required of all students (PhD and MS track):

- CHEM 720: Introduction to Chemical Research (2 credits)
- BIOC 790: Seminar (second year seminar, 1 credit)
- UNIV 720: Scientific Integrity (1 credit)
- BIOC 790: Seminar (defense seminar, 1 credit)
- BIOC 673: Methods of Biochemical Research (3 credits)
- BIOC 674: Methods of Recombinant DNA Technology (3 credits)
- BIOC 701: Comprehensive Biochemistry I (4 credits)
- BIOC 702: Comprehensive Biochemistry II (4 credits)

For students in the PhD track, the following course is also required:

- BIOC 790: Seminar (Maxi proposal seminar, 1 credit)

Candidates for the MS degree are required to earn at least 30 semester credits, which can include credits for thesis research and seminar. No fewer than 16 of these shall be courses carrying graduate credit (courses numbered 601 to 789), and of these 16 credits, a minimum of 10 must be from courses numbered 701 to 789. The number of research credits (798) applied to the MS degree must equal at least 6, but cannot exceed 10 credits.

A student matriculating with a Master's Degree, including one earned at an international institution, must earn not fewer than 60 graduate credits at NDSU. Of these credits, not fewer than 15 credits must be NDSU courses numbered from 701 to 789. Courses numbered 601-689 may be used for the Plan of Study as long as they have not been taken in an undergraduate or previous graduate program.

10. Departmental Seminars

A minimum of two departmental seminar presentations is required for the MS Degree. The first seminar is typically delivered during the third semester in residence. The seminar shall be based on the refereed literature on a topic that is typically relevant to the student's research. The second seminar is the thesis seminar, which is typically delivered just prior to the final thesis defense. The thesis seminar shall be a presentation of the student's research. See the Appendix for additional information.

Candidates for the PhD degree are required to give at least one seminar in addition to those required of a MS candidate. That seminar is the public presentation of the original research proposal (vide infra).

Each student must enroll in Graduate Seminar (BIOC 790) for the semester in which his/her seminar will be presented. Students who leave NDSU prior to completing their thesis or dissertation must register for Graduate Seminar in the semester of their defense and present their final seminar in order to have their thesis defense paperwork processed.

A copy of each seminar notice must be submitted by the student to the Departmental Administrative Assistant, and to the GSPC Chair, at least one week prior to presentation of the seminar. The thesis seminar is a significant event for both the student and the Department. As such, it should be scheduled during a “normal” seminar time to facilitate the largest possible attendance of Department members and guests. For example, Monday, Tuesday or Thursday afternoons in Ladd 209 would be appropriate. An afternoon thesis seminar may require scheduling the final thesis defense on the following day.

Seminars play an important role in graduate education. Hence, regardless of whether the student is enrolled in Graduate Seminar, attendance at all departmental seminars is expected.

11. Preliminary Exam (Oral Comprehensive Examination and Defense of an Original Proposal)

To be granted candidacy for the PhD Degree, a student must pass the Preliminary Examination process by successfully defending an original, written research proposal and demonstrating sufficient knowledge in their discipline. The proposal may be written on any appropriate topic. However, in order to fortify the student’s expertise and deepen their understanding of their research area, the topic may be aligned with, but not identical to the student’s dissertation research. If the proposal is to be along the lines of the student’s research project, it must constitute a significant outgrowth or expansion of the project that would be worthy of consideration by a private or federal granting agency. Judgement of such worthiness will be made by the A&E Committee following the student’s presentation of their mini-proposals.

In the fourth semester of residence (typically the spring of the second year), written summaries of at least two putative proposal topics (mini-proposals) shall be submitted to the student's A&E Committee. The Committee will judge the acceptability of the mini-proposals following a presentation of the ideas in an A&E Committee meeting. The submission of the mini-proposals and the approval to proceed to the full written (maxi) proposal must be started and completed by the end of the fourth semester (*i.e.*, spring semester of the second year) in residence. If one of the initial two mini-proposals is not acceptable, the student will have the opportunity to submit more mini-proposals for

acceptance. However, the submission and acceptance of additional attempts, should be targeted for the end of the fourth semester.

If a student cannot gain approval to proceed to the maxi-proposal by the end of the fourth semester, it will be at the discretion of the A&E Committee to push back the timeline by a semester to complete the mini-proposal step. It is also during the fourth semester and the mini-proposal process that the A&E Committee should carefully consider if a student should proceed towards PhD candidacy, convert to the MS track, or be dismissed from the program, especially if progression to the maxi-proposal is not approved.

Mini-proposal guidelines: The goal of the mini-proposals is to determine if the student has a solid foundation for expanding a topic into a full-blown written (maxi-) proposal. Each mini-proposal should be no more than two pages (single-spaced), and should include an introduction to the problem/question (including relevance and significance), a hypothesis, tentative specific aims to address the hypothesis, and a summary paragraph describing how “if successful”, the proposal might contribute to the advancement of knowledge in the field. Each of these sections should only include pertinent information necessary for the A&E Committee to evaluate the potential for the topic to be expanded into a full proposal successfully. The mini-proposal is not the full proposal, and should not be treated as such.

Once a mini-proposal topic is approved, the candidate will proceed to the full, written (maxi-) proposal stage of the process. The candidate will (1) prepare a maxi-proposal on the chosen topic and (2) schedule a formal presentation of it to the department and their A&E Committee during the semester immediately following the approval of the mini-proposal topic (typically the fifth semester or fall of the third year in residence). The student will need to schedule a date, time, and room for the seminar, which is their public presentation of the original research proposal (*vide infra*) and in which their A&E Committee members should attend. The student will also need to schedule a date, time, and room for the oral defense of the proposal with their A&E Committee. These two events (seminar and defense) do not have to occur on the same day, but the seminar should precede the oral defense. Care should be taken by the student to schedule the oral defense with all committee members such that they are available for at least three hours. In addition to the oral defense of the original proposal, students will also be examined on their coursework, as determined by their most recently approved Plan of Study (see Section 8 for further details) and on fundamental principles, concepts, and knowledge base applicable to their particular discipline.

Registering for the seminar: At the beginning of the semester in which the proposal will be defended (*i.e.*, fifth semester in residence), the candidate must register for one credit of “BIOC 790: Seminar” (for the proposal seminar). Following the presentation of the seminar, the student will be assigned a letter grade for their presentation by the A&E Committee. The seminar and grading must be completed within the semester in which the student registered for BIOC 790.

Official scheduling of Preliminary Exam with the Graduate School: At least two weeks prior to the proposal defense, the student must file an official request to schedule the Preliminary Exam with the Graduate School. The [“Notification of Scheduled Examination” form](#) must be obtained from the Graduate School, completed by the student, and then signed by the student's advisor and the Chair of the Department prior to being filed in the Graduate School office. The written proposal must then be distributed to the A&E Committee at least one week prior to the scheduled date of the oral defense. Prior to the defense, the candidate must also obtain and complete the [“Report of Preliminary Examination” form](#) for A&E Committee members to sign. This form must be turned into the Graduate School within seven days of the defense/exam. The oral defense and examination must be completed successfully at least eight months prior to the defense of the thesis.

The proposal defense will be administered by the student's A&E Committee and will be open to any other faculty members who are requested or who wish to attend. Guest examiners will be considered temporary, non-voting members of the A&E Committee at this oral exam. Upon passing the preliminary oral exam, a copy of the signed Graduate School form will be placed in the student's file.

The Committee's recommendation regarding the student's candidacy for the PhD degree will depend on its overall perception of the student's performance in the oral proposal defense and comprehensive examination. That evaluation is based on three general criteria:

- the depth of development of the proposal,
- the quality of the written document,
- the student's theoretical and working knowledge of fundamental chemical, biochemical, physical, and/or molecular biology principles, as evidenced by the student's ability to discuss them in the oral examination, typically although not necessarily, in some connection with the research proposal.

Failure to pass the oral comprehensive examination and defense of the original proposal (more than one vote of “disapprove”), will potentially lead to a recommendation that the student not be admitted to candidacy for the PhD degree. The opportunity to earn an MS Degree can be afforded the student in this circumstance. The Committee is empowered to take other actions, if it feels they are warranted. For example, the Committee may require a reexamination on the same or a different topic. This reexamination must occur and be completed by the end of the next semester (*i.e.*, the sixth semester or spring semester of the third year in residence). Failure to satisfactorily complete a second attempt at the oral comprehensive examination and defense of the proposal will result in one of two options: (1) the opportunity to complete the MS Degree track or (2) removal of the student from the program. This will be determined by the student's A&E Committee.

Maxi-proposal guidelines: Key elements of any good proposal are the significance, scope and originality of the proposed research, the logical construction of the research plan, and the relationship of the research to what is already known. Common

shortcomings of research proposals include choice of a topic that differs only slightly from work already published in the refereed literature. Such "derivative work" is generally considered to be of marginal importance, especially if the overarching problem is already considered solved. If the student chooses a topic about which much is already known, it is imperative that (1) the worth and unique features of the proposed project be emphasized and (2) a compelling case be made for the likelihood that new, worthwhile information will result.

Drafting of a research proposal is usually most efficient and effective when the scientific method is used. In general, the proposal begins with a statement of the observation upon which the proposal is based and/or the problem that the proposal will address. Then the significance and technical background for the proposed research is articulated. At this point, a hypothesis based on the first two sections is constructed. The experimental approach to testing the hypothesis is then briefly described in the form of aims or goals of the proposed work. Finally, the research plan describes the course of experiments and how the results will be interpreted in the context of the hypothesis. A good research plan recognizes potential pitfalls of the proposed experiments, including the possibility that the results may be different than expected, and sets forth contingencies for those eventualities. The proposal document shall be presented in the format of an ACS-PRF Type AC, an NIH-R01, or an NSF investigator-initiated grant proposal, including a project budget and budget justification. Forms and budget examples for the National Science Foundation and the National Institutes of Health may be found at <http://www.nsf.gov/funding/> and <http://grants1.nih.gov/grants/funding/phs398/phs398.html>. This information may be helpful in preparing the maxi proposal.

12. Residency Requirement

The NDSU Department of C&B will not award any graduate degree without at least one academic year of full-time enrollment. The requirement may be met by residence at the institution for two semesters on a full-time basis. Part-time students earn residence in proportion to the number of credits earned.

An advanced degree in Biochemistry is research intensive. The research components of both the Master's and Doctoral programs constitute the most singular requirement for graduate degrees. All thesis research must be performed under the close supervision of a member of the graduate faculty (or an approved adjunct faculty member) of the Department of C&B.

It is most desirable that the major portion of the thesis research be performed while the student is in residence on the NDSU campus. A reasonable exception to this policy would involve the necessity to use instrumentation or facilities that are unavailable on the NDSU campus.

If the student is performing research for an employer other than the NDSU Department of C&B, and a portion of that research is to be applied to fulfill the thesis

requirement, then it is the responsibility of the student's A&E Committee to decide whether that research meets the standards and requirements established for the C&B Degrees. This decision will usually require a delineation of the student's responsibilities to their thesis advisor. This delineation of responsibility should be worked out to the satisfaction of the student's A&E Committee during the first meeting.

13. Time Limitations

All requirements for the MS Degree must be completed within a period of seven (7) consecutive years. Graduate credit for any course work that was completed more than seven calendar years prior to the time of the final defense will no longer satisfy degree requirements.

All requirements for the PhD degree must be completed within a period of ten (10) consecutive years. Graduate credit for any course work, not included in a Master's Degree, which was completed more than ten calendar years prior to the time of the final defense will no longer satisfy degree requirements.

14. Teaching

The Department of C&B regards the role of Teaching Assistant (TA) as crucial to its undergraduate teaching mission. The Department relies on TAs for the smooth functioning of laboratory sections. Typically, there is close contact between the TA and students in the laboratory. This means that the student's impression of the subjects of C&B in general, and the NDSU Department of C&B in particular, may stem from that contact. It is therefore important that the experience be a positive one.

To that end, all TAs are required to attend teaching sessions held in the Fall during the week before classes begin, as well as any additional teaching sessions during the initial weeks of each semester. Teaching Assistants also are required to coordinate with the instructor of record through weekly planning sessions. Minimum expectations of all TAs include:

- Knowledge of safe practices and rigorous practice of safety protocols in the laboratory.
- Reading and comprehension of the appropriate laboratory exercise prior to the lab session, recognizing what results the students should obtain and any issues they may have during the experiment.
- Participation in any lab setup/prep prior to lab session as required by the instructor of record.
- Arrival at scheduled laboratory sessions at least 5-10 min before class begins.
- Delivery of a relevant introduction for the experiment to the students.
- Tracking of student attendance and following of all grading policies as assigned by the instructor of record.
- Interaction with students in a professional manner.
- Treating student work and grades with confidentiality as required by FERPA.

- Ensuring that the lab is clean and ready for the next lab section at the end of your scheduled lab session.
- Perform exam proctoring and/or exam grading when assigned.

TAs are expected to fulfill all assigned teaching duties and should not plan on absences that would prohibit the fulfillment of these duties. In cases of unanticipated absences (*i.e.*, illness), TAs are required to contact the instructor of record as soon as possible and work to find someone to cover all TA responsibilities during their absence.

In cases of anticipated leave (*e.g.*, to attend a conference), TAs need to complete the [TA Leave Request Form](#) available on the Department website. This form then needs to be approved by the instructor of record and the Department Chair before any travel. Failure to obtain proper approval for TA Leave could result in the loss of the assistantship.

Student evaluations are collected for every laboratory section. The process is usually organized by the instructor of record.

15. Assistantship Expectations, Outside Employment, and Leave

Graduate study in the molecular sciences requires a high level of commitment and responsibility. As such, most graduate students make a full-time commitment to their programs of study. Students who receive full-support stipends (*i.e.*, a Research Assistantship (RA) or TA) are required to pursue their training on a full-time basis, devoting each day of the normal work week, plus any additional time required by their research projects, academic courses, and/or teaching responsibilities. Minimum expectations of all students on assistantships include:

- Suitable progress in coursework, including the expectation of attendance at all classes and the taking of all exams as scheduled.
- Suitable progress on research projects and fulfillment of all Departmental degree requirements as scheduled.
- Knowledge of safe practices and rigorous implementation of laboratory safety protocols.
- Annual fulfillment of all required University training.
- Attendance at Departmental Seminars.

Students failing to fulfill these obligations may lose their assistantship.

Students on full assistantships are not allowed to work on a second assistantship, as part-time instructors, as student workers, or in any other capacity for NDSU, any other campus in the North Dakota University System (NDUS), or any State of North Dakota agency or office, unless an exception is approved by the Dean of the College of Graduate and Interdisciplinary Studies prior to the work being performed (see the policy on **Additional Employment at NDSU or in the NDUS** in the [NDSU Graduate Bulletin](#) for further information).

All students on full assistantships receive support for holidays and annual leave as follows:

- **Holidays.** Graduate students are entitled to observe University closings for Holidays and other recognized events. The University currently recognizes the following holidays: Labor Day, Veterans Day, Thanksgiving Day, Christmas Day, New Year's Day, Martin Luther King, Jr. Day, Presidents Day, Easter, Memorial Day, and Independence Day. **With the exception of the specified days above, the time periods between academic terms and over the summer are considered part of the active period of the assistantship and are not to be regarded as holidays or free time.**
- **Paid Leave (absence from work due to vacation, illness, etc).** Graduate students on full assistantships are not allowed paid leave.
- **Leave of Absence.** Students needing more extended leave may choose to take an unpaid leave of absence from their graduate program. International students will need to consult with the Office of International Student and Study Abroad Services to determine if they are eligible for a leave of absence. Any such leave of absence would need to be arranged with the NDSU Graduate School.

16. Research Credits and Continuous Enrollment

Students carrying out research that requires or utilizes faculty direction or consultation and/or the use of University facilities, students must be registered for research credits during each semester and summer session. In the summer session, students on assistantships should register for a minimum of six semester credits.

Students who are conducting research for their disquisition are to be enrolled in either Biochemistry 798 (Master's Thesis), or Biochemistry 899 (Doctoral Dissertation) for the number of credits specified on their Plan of Study. Research includes reviewing the scientific literature and writing of the disquisition. Should additional time be needed to complete the research after having already taken the number of disquisition credits specified in the Plan of Study, the student must register for either Biochemistry 798-R, or Biochemistry 899-R, respectively. Registration is required every semester, even if the student is in absentia, until the final copies of the dissertation have been received and accepted by the Graduate School.

Students who have completed all portions of their Plan of Study (including written examinations, if given) except for their disquisition are expected to maintain continuous enrollment until degree requirements are completed. If continuous enrollment has not been maintained, the Graduate School will not schedule a final examination until the student has registered for the appropriate number of credit hours for the intervening period following the last enrollment. The number of credits is determined by the Graduate Dean after consultation with the student and will amount to no less than one credit for each term not registered.

Students who must interrupt their research may obtain a leave of absence from the Graduate School which would exempt them from continuous enrollment. Prior to returning to the University, the student shall notify the Graduate School, which will restore the student's classification to active status. Students who move out of state may maintain their North Dakota residence status for a period of 12 months, after which it is assumed that out-of-state status applies. Clarification of status may be obtained by consulting the University Registrar.

Students who have been absent from the University for two consecutive years without having been granted a leave of absence must reapply for admission to the Graduate School.

17. Final Dissertation Defense (Oral Examination) and Submittal

Both MS and both PhD programs require that the student submit and defend a Thesis or Dissertation (Disquisition). It must show originality and demonstrate the student's capacity for independent research. It must embody research results that constitute a substantive contribution to scientific knowledge.

Upon mutual agreement between the student, their thesis adviser and their A&E Committee, each student will undertake the writing of their dissertation. Upon completion of the dissertation, the student will arrange a public seminar presentation of their research results, and the final defense of their work in a closed oral exam with their Committee. The defense typically occurs near the end of the sixth year in residence. However, it can occur as early as the fifth year or as late as the seventh. Failure to defend by the end of the seventh year in residence will result in termination of any and all student financial support from NDSU and dismissal from the program.

The disquisition, prepared in accord with the [Graduate School's Guidelines for the Preparation of Dissertations, Theses, and Papers](#) and in a nearly final form, must be submitted to the A&E Committee no less than seven days prior to the examination. If this stipulation cannot be met, the student must either have the approval of the A&E Committee to proceed with the scheduled examination, or reschedule the exam. The final examination must be scheduled at least two weeks before the date of the university graduation exercises.

Care should be taken by the student to schedule the seminar and examination with all committee members. Permission to schedule the examination must be requested by filing the Request to Schedule Final Examination form with the Graduate School. The request to schedule must be sent to the Graduate School two weeks prior to the examination. Also, the student must personally meet with the Registrar to verify that all courses on the Plan of Study have been completed, and that the required grade point average has been attained. The Request to Schedule Examination must be signed by the student, the advisor, the Chair of the Department, and the Dean of the College prior to being filed in the Graduate School office. The Dean of the Graduate School will

formally notify all members of the A&E Committee and the student when the request to schedule the Final Examination has been approved.

Following the final examination, the A&E Committee shall record in writing whether or not it approves not only the disquisition, but also the defense (and comprehensive examination, where applicable for MS candidates). This form should be filed with the Graduate School within seven days of the exam.

A negative vote by more than one member of the student's A&E Committee will signify failure of the final examination. If the report of the A&E Committee recommends failure, the student may repeat the examination with approval of the majority of the Committee. The second attempt must be made before the end of the term following the failure. Exceptions to this time limit will be considered by the Dean of the Graduate School upon presentation of written justification from the A&E Committee.

Should the examination be failed twice, the student will not be given a third examination, except by recommendation of the A&E Committee, Department Chair, and special approval of the Dean of the Graduate School, following consultation with the NDSU Graduate Council.

After the disquisition has been approved by the major Advisor and the A&E Committee, the student should follow NDSU graduate school instructions for submission and final approval of the disquisition provided at:
http://www.ndsu.edu/gradschool/current_students

Submission of the disquisition in approved form constitutes the final requirement, which must be satisfied prior to the awarding of the degree. The student will have a maximum of one year following the final examination to deposit the disquisition with the Graduate School to completion the degree requirements. Should the disquisition not be submitted as specified, the student must repeat the final examination.

Students must meet check-out requirements prior to departure from campus or the final defense, whichever is later. Building and laboratory keys should be returned to the Department of C&B stockroom. Proper disposal of all research chemicals is the responsibility of the student, in consultation with the major Advisor. If there are hazardous chemicals that will not be used by other researchers in the group, then arrangements for disposal must be made with the campus Safety Officer. All Library books should be returned. The check-out form (see the Appendix) must be signed by the student, Major Advisor, Stockroom Supervisor, OSL Manager and Library Liaison for the College of Science and Mathematics. *This completed form must be on file before the Department Chair will sign the disquisition approval page.* The Departmental Check-out Form is available in electronic format on the C&B web site.

The ability to communicate research findings to a community of peers is an important outcome of graduate education. To that end, students in the PhD track are expected to have at least one manuscript accepted for publication in a peer-reviewed

journal by the time they defend their thesis. In the event that the manuscript is either declined, or accepted with revisions, the student must present a strategy for publication at the final defense.

18. Graduate Records and Student Progress

The student will be apprised of timetables and regulations at the beginning of their studies. Subsequently, it is the responsibility of the student and the major advisor to meet the timeliness for the degree program, including the scheduling of annual meetings of the A&E Committee.

19. Typical Time Line for Master’s Degree Candidates

Relative Timing	Requirement to be Completed
Prior to registration for first semester	- Academic Evaluation Test (AET)
First academic semester	- Remove academic deficiencies
End of first semester	- Select thesis advisor
End of second semester	- Establish A&E Committee - Hold first A&E Committee meeting - File Plan of Study - Pass 3 of 6 sections of the AET
Third semester	- Give first departmental seminar
End of fourth semester	- Hold second A&E Committee meeting or - Give thesis seminar and pass final defense and oral comprehensive examination
Third-seventh year	- Hold annual A&E Committee meeting or - Give thesis seminar and pass final defense and oral comprehensive examination

20. Typical Time Line for Doctoral Degree Candidates

Relative Timing	Requirement to be Completed
Prior to registration for first semester	- Academic Evaluation Test (AET)
First academic semester	- Remove academic deficiencies
End of first semester	- Select thesis advisor
End of second semester	- Establish A&E Committee - Hold first A&E Committee meeting - File Plan of Study - Pass 3 of 6 sections of the AET
Third semester	- Give first departmental seminar
End of fourth semester	- Hold second A&E Committee meeting - Complete or nearly complete didactic courses - Submission and presentation of "mini-proposals" - Receive approval to proceed to "maxi-proposal"
End of fifth semester	- Submit full "maxi-proposal" to A&E Committee - Give second departmental seminar - Defend maxi-proposal and pass oral defense and comprehensive exam
End of sixth semester	- Completion of didactic courses (if necessary) - Completion of retake of oral defense of maxi-proposal and comprehensive exam (if necessary)
Fourth-tenth year	- Hold annual A&E Committee meetings - Give thesis seminar - Pass final defense - NOTE: financial support ends after 14 semesters

Final Note: Failure to stay on the time line prescribed herein is grounds for dismissal from the degree program. In order to continue in the program, approval of the A&E Committee will be required. Even if the student is granted permission to continue, the A&E Committee may impose other sanctions (*vide supra*).

21. Appendix

The report forms for the Annual Meeting of the Graduate A&E Committee, Graduate Seminars, Graduate Comprehensive Exam, and the Final Thesis Defense are available for download on the Department of Chemistry and Biochemistry web site. They are fillable pdf forms. Before each A&E Committee meeting, seminar and oral exam, students should complete the top of the relevant form, save it and send it as an email attachment to the chair of their A&E Committee.