

CHEMISTRY, PH.D.

The Department of Chemistry and Biochemistry offers a research-intensive PhD program resulting in the production of significant publishable research outcomes. Completion of the PhD program typically takes 4.5-5.5 years, the bulk of which is spent conducting chemistry or biochemistry research. Additional focus will involve coursework and professional development, including the practice and maturation of written and oral communication skills.

Admissions

In addition to meeting the general requirements of the Graduate School, entering graduate students should have completed undergraduate coursework equivalent to a BS degree in chemistry or biochemistry.

See the Admission Criteria section of this catalog for more information.

Curricular Requirements

Code and Title	Hours
Lecture Courses ¹	18
CH 505 Medicinal Chemistry	
CH 519 Physical/Analytical Core	
CH 520 Structure/Bonding Core	
CH 524 Adv Anl Ch I Spec Meth	
CH 526 Chemometrics	
CH 530 Intro Grad Org Chem	
CH 531 Adv Organ Chem I-Physicl	
CH 532 Adv Org Ch II React Synt	
CH 549 Adv Ph Ch II Atom/Mol	
CH 561 Biochemistry I	
CH 562 Biochemistry II	
CH 563 Biochemistry Lab	
CH 564 Adv Biophysical Chem	
CH 566 Bioorg Reac Mech	
CH 565 Adv Bio-Inorganic Chem	
CH 601 Adv Inor Chi:Strct Mth	
CH 605 Spec Topics Inorg Chem	
CH 609 Organometallic Chem	
CH 615 Solid State Materials Chem	
CH 618 X-ray Diffraction	
CH 621 Trends In Analytical Chem	
CH 625 Electrochemistry	
CH 626 Surface Analytical Techniques	
CH 627 Mass Spectrometry	
CH 635 Sel Topics In Org Chem	
CH 637 Spectroscopic Techniq	
CHE 512 Polymer Materials Engineering	
CHE 551 Adv Thermodynamics I	
PH 534 Digtl Elect Comp Interfc	
PH 551 Machine Learning	
PH 581 Solid State Physics	
PH 585 Magnetism	
PH 591 Advanced Laboratory	
Chemical Literature and Communication	3

CH 584 Chem Lit & Comm	²	
Seminar Courses		10
CH 583 Intro to Chemistry Research	³	
CH 585 Chemistry Seminars	⁴	
CH 586 Research Seminar	⁵	
Research Courses		15
CH 570 Research Techniques Chemistry		
CH 660 Adv Research Techniques Chem		
Program Requirements	⁶	2
CH 680 Initial Research Review		
CH 681 Oral Candidacy Exam		
Dissertation Research	⁷	18
CH 699 Dissertation Research		
Total Hours		66

Footnotes

- ¹ Students should complete 18 credits of lecture courses in the first two years. CH 519/CH 520 should be taken during the first semester as core courses. The remaining 12 hours should be selected in consultation with their research advisor.
- ² CH 584 Chem Lit & Comm is taken in the Fall of the second year. Students must earn a grade of 'B' or higher.
- ³ Students should register for 1 credit of CH 583 Intro to Chemistry Research in the Fall of their first year.
- ⁴ Student registration in CH 585 Chemistry Seminars is required every semester unless there is a TA assignment conflict. 8 credit hours is the minimum required, but most student will take 9 or more hours (see Additional Academic Requirements).
- ⁵ Enrollment in CH 586 Research Seminar will occur in the final semester.
- ⁶ Students should register for CH 680 in the Spring of their second year and CH 681 in the Spring of their third year.
- ⁷ Students can begin registration for CH 699 in the semester following successful completion of CH 681 and Graduate School-approved PhD Candidacy. Once enrolled, CH 699 must be taken every semester through degree completion.

Transfer Credit

Students seeking transfer credit must submit a Request for Transfer of Graduate Credit to the Graduate School, obtain written approval from their assigned graduate research advisor, and send official completed graduate course syllabi to the Graduate Director for course equivalency evaluation. The Graduate Director may consult corresponding UA instructors-of-record for assistance with course equivalency comparisons. Although students may request to transfer up to four lecture courses (maximum of 12 credits), approval of transfer credit for more than two lecture courses requires evaluation and approval by the the Department Graduate Committee. Transfer credits will not be awarded for research, seminar, or oral/written candidacy courses. Also see Graduate School information on Transfer Credit.

Doctoral Plan of Study Requirement

Graduate School Information on the Doctoral Plan of Study can be found here.

Admission to Candidacy Requirements

Candidacy to the Ph.D. program occurs when a student has completed the following: 1) all formal coursework, 2) passed CH 584 Chem Lit & Comm with a grade of 'B' or higher, 3) passed CH 681 Oral Candidacy Exam and submitted a committee-signed review form to the Graduate Director, and 4) filed for Admission to PhD Candidacy. In general, all these requirements are completed by the end of the student's sixth semester in the program.

The written critical review of a pre-approved scientific publication in CH 584 Chem Lit & Comm serves as the written candidacy exam. The student's committee will evaluate the written document near the end of the Fall semester and provide a list of required document revisions by the Thursday immediately preceding Finals Week. The revised document will be submitted to the committee for final evaluation by the Friday of Finals Week. The revised document must be deemed satisfactory by a majority of the committee members to pass the written cumulative exam requirement. **Failure to pass this requirement will result in dismissal from the Chemistry and Biochemistry Ph.D. program.** The Graduate Committee will determine, with input from the dissertation committee, whether relegation to the Master's program is appropriate.

After completion of the written candidacy exam (see above), students must complete the oral candidacy exam (OCE). Students will present a detailed research summary and an original research proposal. Each of these parts will be supported by a written document delivered to every committee member at least one week prior to the exam. In connection with this exam, students must register for CH 681 Oral Candidacy Exam.

OCE Research Presentation:

Students should prepare an oral presentation (supported with computer graphics) of results and prospects to be presented to the dissertation committee during the exam. Slides should be clear and properly referenced. The research presentation will include: A) a summary of progress (grades, comprehensive written exam, manuscripts, awards); B) a discussion of the background and significance of the research project; C) a description of the work completed to date; and D) a description of plans for completing research for a dissertation.

Students should demonstrate command of their project's background and goals. The motivation behind the project should be described. Additionally, students should begin to demonstrate the ability to critically evaluate their own results as well as make predictions regarding the outcomes of future work.

The research presentation will be supported by a written report composed of a minimum of 3000 words excluding figures, tables, and the bibliography. The word count must be added to the end of the document. All information from sources other than the student (including other group members, UA personnel, and external resources) should be properly attributed. A list of consistently formatted references should be appended to the end of the report and will not contribute to the word count.

OCE Original Research Proposal:

The remainder of the exam will involve the defense of an original research proposal. The proposal can be related to the student's research but cannot involve an extant part of the advisor's research program. Alternatively, the student can propose a line of inquiry remote from their own projects. In either case, the topic must be endorsed by the advisor as being neither a current direction within their group nor a project idea formulated by the advisor. The

advisor may not be involved in proposed project design, proposal editing, or presentation preparation. Failure to abide by this policy, as judged by the approved committee, may result in either an "incomplete" or "fail" grade (see below) at the discretion of the committee. Students are permitted to consult any resources other than their advisor/Committee Chair in preparing the defense of their Original Research Proposal, including non-Chair committee members. A proposal abstract must be approved by the advisor and then by all committee members at least 8 weeks in advance of the examination. The student will be evaluated on the identification of a significant research question, the development of hypotheses, and the proposal of specific experiments to test these hypotheses. The scope of the proposal should encompass a single specific aim with the recognition of potential problems in the experimental design and contingency experiments to overcome them.

The proposed project should be described in a properly referenced paper distributed to each committee member at the same time as the research report. The proposal should be a maximum of 3000 words excluding figures, tables, and the bibliography. An oral presentation of the proposal must be prepared and defended by the student at the exam.

The committee will evaluate the presentations and award an overall grade. A passing grade indicates that the student has passed both parts of the exam and satisfies the oral requirement for doctoral candidacy. Where one or both parts of the exam were deficient, an "incomplete" will be given. Additional work will then be required by the student to earn a passing mark. The nature of such work and the procedure to evaluate the results will be determined by the student's committee. All remediation must be completed by no later than the deadline established by UA for the change of outstanding "I" grades to "F" grades (see Graduate School Deadlines for specific dates) or at an earlier date unanimously established by the committee. Failure to satisfy the requirements by the indicated date will result in a grade of "fail". Satisfactory completion of this additional work will change the grade to "pass". **The receipt of a "fail" grade signifies serious deficiencies that necessitate dismissal from the Ph.D. program.** The Graduate Committee will determine, with input from the dissertation committee, whether relegation to the Master's program is appropriate.

Continuous Enrollment Policy

See Graduate School information on CH 699 Dissertation Research Continuous Enrollment.

Dissertation Requirements

1. Committee Formation

After consulting with their research advisor, students will designate a dissertation committee in their second semester. The committee is composed of five members: the research advisor (chair), three faculty from the Department of Chemistry & Biochemistry, and one faculty member or professional scientist from outside of the Department. This last member can be a faculty member from another UA department or an individual from off-campus. In the latter case, the individual must hold a Ph.D. (or equivalent terminal degree) and must have a demonstrated record of research or scholarly activity. These individuals must be appointed to temporary membership on the UA Graduate Faculty.

2. Amount of Research for Dissertation

As chair of the dissertation committee, the research advisor will largely determine the amount of work required for the dissertation; however, the

entire dissertation committee is involved in judging both the quality and quantity of research work accomplished as well as its defense by the student.

3. The Final Version of the Dissertation

A final version of the dissertation will be given to each of the committee members serving on the Dissertation Committee at least two weeks before the oral defense. The student is responsible for all aspects of the production of the dissertation, including the preparation, word processing, reproduction, dissemination to the committee members, and all costs involved. It is likely that the committee will recommend edits to the dissertation following the oral defense. All committee-requested edits must be approved by the committee prior to final dissertation submission to ProQuest.

4. Oral Defense of Dissertation

Students must enroll in CH 586 Research Seminar during the semester they plan to defend their dissertation. Students will schedule the seminar (public) and committee (private) defense by coordinating with their committee chair. Students must submit a Public Notice of Dissertation Defense and send research seminar and defense scheduling information to the Graduate Program Assistant or Graduate Director at least two weeks before the scheduled defense. A majority affirmative vote by the Dissertation Committee hearing the oral defense constitutes satisfactory fulfillment of the research and dissertation requirement. Students should contact The Graduate Director shortly after the successful defense to initiate the Dissertation Defense Form for committee signatures.

5. Committee Acceptance Form

After submission of the final, approved dissertation to ProQuest, students should immediately contact the Graduate Director to initiate the Committee Acceptance Form. **Students must meet the Departmental publication requirement** (see Additional Academic Requirements) **before the Department will submit the Committee Acceptance Form for Graduate School approval.**

Time Limits for Degree Completion Requirements

See Graduate School information on Time Limits.

Student Progress Requirement

Students will hold annual meetings with their approved committee each Spring semester during their first three years and every fall semester beginning in year 5 (i.e., every 9th and subsequent odd-numbered semester, as permitted by the Graduate Director and Department Chair beyond year 5):

1st year - First Year Review (FYR)

2nd year - Initial Research Review (IRR, CH 680 Initial Research Review)

3rd year - Oral Candidacy Exam (OCE, CH 681 Oral Candidacy Exam). See Admission to Candidacy Requirements for details.

5th year plus - Annual Research Review (ARR; repeated every fall semester until dissertation defense)

Final year - Oral Dissertation Defense

In each meeting, the student will present an update of their progress through the degree program, and the committee will provide feedback regarding the student's progress. For both the IRR (CH 680) and OCE (CH 681), students must earn a "pass" to remain in the program. The committee can request that additional work be completed to address any deficiencies in the presentation or written documents prior to awarding

a passing grade. All remediation must be completed by no later than the deadline established by UA for the change of outstanding "I" grades to "F" grades (see Graduate School Deadlines for specific dates) or at an earlier date unanimously established by the committee. Failure to satisfy the requirements by the indicated date will result in a grade of "fail", with relegation to the MSC program or immediate dismissal from the Chemistry and Biochemistry graduate program, at the discretion of the Graduate Committee.

First Year Review (FYR):

All students must briefly (≤ 30 minutes) meet with their committee within their first 12 months. The purpose of this meeting is to ensure first year students have a basic understanding of their new research project and to familiarize the student with presenting for and interacting with their recently established committee. The FYR is not a defense. No written document is required, and no grade is assigned.

In this meeting, students should present:

- 1) A summary of completed and planned graduate coursework
- 2) A brief (10-15 minute) overview of the recently commenced or forthcoming graduate research, including the problem to be addressed and its significance. A description of research productivity is not expected in the FYR
- 3) Goals for research to be conducted prior to the Initial Research Review

Items 2 and 3 should be completed with significant input from the research advisor.

Initial Research Review (IRR, CH 680 Initial Research Review):

All students must present to their committee an initial review of their research efforts, taken as a 1 credit course (CH 680 Initial Research Review) and completed by the end of their 4th semester. The purpose of this meeting is for the student to demonstrate a working knowledge of their research project and associated fundamental concepts and to document first and second year research progress for the committee. The committee will question the student and provide input about the research effort. Two aspects of this examination are considered by the committee:

- 1) A written summary (generally 2500-4000 words excluding references) of the project and the initial research findings by the student with an associated discussion. This document must be provided to the committee at least one week in advance of the meeting.
- 2) An oral presentation with a period for discussion and questioning to follow such that the entire meeting is completed within 2 hours. The oral presentation should include:
 - A. A summary of completed graduate course work
 - B. A discussion of the background and significance of the research project
 - C. A description and analysis of the work completed to date
 - D. A description of plans for the next year

Comments from the committee about the student's IRR will become part of the student's academic record, and the committee will assign the student a grade for the CH 680 course based upon research productivity, familiarity with the project, and the quality of

the written summary, oral presentation, and student's participation in associated discussion.

The grades will be:

PASS: the student has made satisfactory progress to continue in the program. The committee will also determine if the student should continue in the doctoral or M.S. degree program.

FAIL: the student has not made satisfactory progress and/or does not communicate satisfactory understanding of their project and associated fundamental concepts and should be dismissed from the graduate program.

INCOMPLETE: the written summary and/or presentation was unsatisfactory, but the committee feels that with additional work, a passing grade can be earned. This remediation must be completed by no later than the deadline established by UA for the change of outstanding "I" grades to "F" grades (see Graduate School Deadlines for specific dates) or at an earlier date unanimously established by the committee.

Annual Research Review (ARR):

Annual committee meetings after achieving PhD candidacy will be held every Fall semester beginning in year 5 (i.e., 9th semester) to ensure students remain on track for the timely completion of their PhD degree requirements.

During the ARR, students must present:

- (1) A concise research update emphasizing accomplishments since the last committee meeting. This update should be presented and treated as an informal discussion, since annual reviews for PhD candidates are not research defenses.
- (2) A draft table of contents for the dissertation including planned work required for dissertation completion.

Every student is required to schedule an Annual Research Review with their dissertation committee beginning in their 9th academic semester and every subsequent odd-numbered semester in which the student is authorized by the Director of Graduate Studies and Department Chair to continue with financial support. The student will prepare and distribute a structured draft of the table of contents for their planned dissertation. Sections or chapters should be labeled as completed, in progress, or planned. No other written document is required. The student will then present an oral research update (generally 20-30 minutes using PowerPoint slides) to the committee. The update should de-emphasize background information and focus on recently employed research methods and recently obtained research results. An important part of the discussion will involve the additional work that should be completed for the dissertation and the timeline for its completion.

Students with dissertation defenses scheduled to allow for graduation in the ensuing spring semester may petition the Graduate Director for exemption from the fall Annual Research Review requirement. The committee chair's signature is required for a valid petition. Students who receive an exemption but who do not defend in time to meet UA spring graduation deadlines must complete an ARR with their dissertation committee before the end of the spring semester to remain eligible for financial support during the summer term. No probationary semester will be authorized for those students.

PhD candidates who are not graduating within a given calendar year are required to repeat the ARR every fall semester until their graduation. At each meeting, the committee will evaluate whether acceptable research progress has been made since the last committee meeting and whether a viable dissertation is likely to be produced within an acceptable time frame. The dissertation committee determines by majority vote if a student is making adequate research progress commensurate with their time in the program. This determination will aid the Department Chair and Graduate Director in decisions to extend the student's departmental support beyond the 5th year, if requested by the student and their committee chair. If the committee determines the student is not making adequate research progress, students may be granted one probationary semester with financial support to remedy productivity deficiencies, at the discretion of the Department Chair and Graduate Director. Failure to meet minimum research expectations by the end of the discretionary probationary semester, as determined by dissertation committee majority vote in a follow-up review, will prompt Department Chair and Graduate Director review for termination of financial support and possible relegation to the Master's Program or dismissal from the Chemistry and Biochemistry graduate program.

Delinquency in Satisfying Annual Committee Meeting Requirements (FYR, IRR, OCE, ARR):

Students who neglect to complete the required departmental First Year Review (FYR) within their first 12 months, CH 680 (IRR) within their first four semesters, CH 681 (OCE) within their first six semesters, or the Annual Research Review (ARR) once annually beginning in their 9th semester are no longer in good academic standing. Students who are within their first nine semesters of UA graduate studies that are delinquent in completing any annual review have one probationary semester (i.e., academic semester or full summer term, as applicable) to satisfy the corresponding review requirement without financial penalty. Students who are in their 10th semester or later must petition the Graduate Director and Department Chair with the written consent of their committee chair for a probationary academic semester to complete an Annual Research Review to remain eligible for continuing financial support.

Failure to satisfy any corresponding annual committee meeting requirement prior to or within an approved probationary academic semester will prompt Department Chair and Graduate Director review for immediate termination of financial support and Graduate Committee review for possible relegation to the Master's Program or dismissal from the Chemistry and Biochemistry graduate program. In cases where extenuating circumstances (e.g., serious illness or pregnancy) affect the timely completion of a committee meeting, the Graduate Director may be petitioned for a deadline extension.

Additional Academic Requirements

At the time of their PhD defense, the PhD candidate must have at least one officially accepted or published peer-reviewed publication involving novel research the candidate completed at UA. In lieu thereof, the student may request examination of their completed dissertation for novel, publishable work by a Graduate Committee-approved external referee who is an expert in the field of the dissertation research project. External review requests must be submitted at least six weeks prior to the scheduled dissertation defense date. A positive external review of the dissertation will satisfy the departmental research publication requirement but no other PhD degree requirement.

All students must enroll in CH 584 Chem Lit & Comm in their second or third semester. Key assignments include a faculty-evaluated written critical review of an approved publication in the student's general field of study and a 20-minute seminar in which the student discusses the published research before the Department. Students who do not earn a grade of 'B' or higher are required to repeat CH 584 during the following fall semester. A second failure to earn a passing grade constitutes inadequate progress toward a graduate degree in Chemistry and Biochemistry and triggers dismissal from the Chemistry and Biochemistry graduate program.

Students are required to register for CH 585 Chemistry Seminars each semester unless there is a conflict with TA responsibilities. In most cases, students will exceed the minimum 8 credits required.

Students must have an approved research advisor after their first semester to be in good academic standing. Students without an approved advisor may not register for CH 660 Adv Research Techniques Chem or CH 699 Dissertation Research courses and, therefore, cannot make progress toward a PhD degree. Students without an advisor will be granted one full semester or full summer term to find a Department approved research advisor. Failure to do so will result in relegation to the Plan I MSC program, possibly with one additional semester of financial support, at the discretion of the Graduate Director and Department Chair.

Academic Misconduct Information

See Graduate School information on Academic Misconduct.

Withdrawals and Leave of Absence Information

Students wishing to withdraw from the program or pursue a leave of absence should contact the Graduate Director. Also see Graduate School information on Withdrawals and Leave of Absence.

Academic Grievances Information

See Graduate School information on Academic Grievances.

Grades and Academic Standing

The student must maintain a cumulative average grade of not less than "B" (3.0) in graduate courses taken at The University of Alabama to be eligible for renewal of either a teaching or research assistantship. Courses in which a student has earned a grade of "P" are not considered in making evaluations of academic standing. Graduate students will be permitted a maximum of two grades of less than "B" in lecture courses. Regardless of grade point average, receiving three grades of "C" or failure in any course ("D" or "F" grade) will result in a review of the student's performance by the Graduate Committee. This review will determine whether the student should continue to receive financial support and/or be dismissed from the Chemistry and Biochemistry graduate program at the end of the semester in which the non-passing grade is earned or at the end of the following semester. A decision will be rendered prior to the start of the semester immediately following the semester in which a third 'C' and/or a 'D' or 'F' grade is reported.

Students who neglect to complete the required departmental First Year Review within their first 12 months, CH 680 within their first four semesters, CH 681 within their first six semesters, or the Annual Research Review once annually beginning in their 9th semester are no longer in good standing. Students in their 9th semester or earlier who are delinquent in completing any annual review have one probationary academic semester, including a full summer term, to satisfy the corresponding review requirement without penalty. Failure to satisfy

the requirement within the probationary academic semester will prompt Graduate Committee review for termination of financial support and possible relegation to the Master's Program or dismissal from the Chemistry and Biochemistry graduate program. Students in their 10th semester or later who are not in good standing are subject to termination of financial support at the end of the current semester at the discretion of the Graduate Director and the Department Chair.

Also see Graduate School information on Grades and Academic Standing.

Graduate School Deadlines Information

See Graduate School information on Deadlines.

Application for Graduation Information

See Graduate School information on Application for Graduation.

Acquisition of Financial Support:

All students in good standing in the Chemistry PhD program are normally supported by a graduate research assistantship (GRA) funded through their advisor, a graduate teaching assistantship (GTA) funded by the Department, or a fellowship. Both types of assistantships provide an equivalent stipend and benefits along with paid tuition and fees. Financial support is guaranteed through the first five years in the program for all PhD students who meet performance expectations and who do not meet any Conditions for Termination of Financial Support (see below). Students will be informed of impending financial support termination at least one semester prior to the support termination date except in the special cases noted under Conditions for Termination of Financial Support. Students in good standing may petition the Director of Graduate Studies for continuing GTA support beyond the fifth year on a semesterly basis. Petitions for continuing support must be submitted to the Director of Graduate Studies at least three months prior to the start of the final semester of guaranteed support. Students in good standing with GRA support beyond the fifth year may continue at their advisor's discretion until GRA support is either exhausted or terminated by their advisor.

Fellowship Nominations:

Eligible students who excel in the program may be nominated by the Department for UA fellowships. Nominees are selected by departmental faculty vote based upon prospective nominee research productivity, academic performance, and contributions to the Department. Fellowship recipients are guaranteed paid tuition and fees, a stipend, and benefits at least commensurate with those provided through GRA or GTA support.

Performance Expectations for Continuing Financial Support:

- The student must be in good academic standing in the Chemistry PhD program. In general, students in the Chemistry MSC program do not receive departmental financial support.
- The student must remain clear of all infractions outlined under Conditions for Termination of Financial Support.
- The student must complete all mandatory annual training and abide by all rules and policies held by The University of Alabama, The UA College of Arts and Sciences, UA Environmental Health and Safety, and The UA Department of Chemistry and Biochemistry.
- Graduate teaching assistants must adequately perform all duties assigned to them in a timely manner as defined by the instructor of record or their designee for all courses to which the student is assigned teaching, grading, and/or laboratory preparative responsibilities.
- Beginning in the second semester, students must conduct research under the direction of a Department-approved research advisor as dictated by the expectations in corresponding CH 660 and CH 699

syllabi. Continuous research progress is expected beginning in the second semester as directed by the research advisor and the student's dissertation committee.

Conditions for Termination of Financial Support:

Students who meet one or more of the following conditions will be subject to termination of financial support pending Department of Chemistry and Biochemistry administrative review. Depending upon the severity of the infraction or the extent of non-compliance, the Department Chair and Graduate Director—with input from the Graduate Committee—will recommend immediate termination of financial support, termination of financial support at the end of the current semester, or termination of financial support (partial or full) at the end of the following semester.

- *Dereliction of duty.* Dereliction of duty includes but is not limited to: failure to comply with all UA safety and interpersonal conduct policies; absence from scheduled obligations without prior notification to the instructor of record or designee (for teaching assistants) or the research advisor (for research assistants); or failure to satisfactorily complete all activities associated with the funded position as defined by the instructor of record or designee (for teaching assistants) or by the research advisor (for research assistants) and the student's departmental memorandum of appointment.
- *Resolved finding of Academic Misconduct.* Penalties, including potential loss of financial support, will be determined with guidance from the UA Graduate School and/or the UA College of Arts and Sciences.
- *Failure to have a department-approved research advisor for more than one semester.* Students without an approved research advisor may not enroll in CH 660 or CH 699 courses and, therefore, cannot proceed toward degree completion. Students without an advisor may be relegated to the Plan I Master's Program with one additional semester of financial support, at the discretion of the Graduate Director and Department Chair.
- *Loss of good academic standing.* Students not in good academic standing have one probationary academic semester after notification of their change in academic status to return to good academic standing—with the non-passing grade exception noted below. Financial support will be terminated if good academic standing is not restored by the end of the probationary academic semester. Students who earn more than two grades of 'C' or at least one grade of 'D' or 'F' in graduate courses will have a compulsory academic performance review by the Graduate Committee. This review will determine whether the student should continue to receive financial support and/or be dismissed from the program at the end of the semester in which the non-passing grade is earned or at the end of the following semester. A decision will be rendered prior to the beginning of the semester succeeding that in which a third 'C' and/or a 'D' or 'F' grade is reported.
- *Delinquent Annual Review.* Students who neglect to complete the required departmental First Year Review within their first 12 months, CH 680 within their first four semesters, CH 681 within their first six semesters, or the Annual Research Review once annually beginning in their 9th semester are no longer in good academic standing. Students who are within their first nine semesters of UA graduate studies that are delinquent in completing any annual review have one probationary semester (i.e., academic semester or full summer term, as applicable) to satisfy the corresponding review requirement without penalty. Students who are in their 10th semester or later must petition the Graduate Director with the written consent of their committee chair for a probationary academic semester to complete

an Annual Research Review. Failure to satisfy any corresponding annual committee meeting requirement prior to or within the probationary academic semester will prompt Department Chair and Graduate Director review for immediate termination of financial support and Graduate Committee review for possible relegation to the Master's Program or dismissal from the Chemistry and Biochemistry graduate program.

- *Insufficient continuous research progress.* The dissertation committee determines by majority vote if a student is making adequate research progress commensurate with their time in the program during required annual reviews. If the committee determines the student is not making adequate research progress, the student will be granted one probationary semester (i.e., academic semester or full summer term) with financial support to remedy productivity deficiencies, as assessed by the dissertation committee. Failure to meet minimum research expectations by the end of the probationary semester will result in immediate termination of financial support and may prompt relegation to the Master's Program, at the discretion of the Graduate Director and Department Chair.