

POLICIES AND CUSTOMS
Ph.D. PROGRAM
DEPARTMENT OF MOLECULAR & CELLULAR BIOCHEMISTRY
UNIVERSITY OF KENTUCKY

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The following is intended to serve as a guide for graduate students in the Department of Molecular & Cellular Biochemistry (BCH). The Graduate School Bulletin should be consulted for detailed procedures and regulations not discussed in this document. The BCH graduate program is designed for doctoral candidates who plan to pursue a research and/or teaching career in this field. The program consists of: (1) formal course work to broaden and deepen one's knowledge about biochemistry and related areas of medicine, chemistry and biology, and (2) original research in the laboratory leading to a dissertation on a biochemical problem.

ENTRY INTO THE PROGRAM

Starting in the fall of 2001, the basic science departments in the University of Kentucky College of Medicine agreed to combine their Ph.D. programs for first year students. As a participant in the Integrated Biomedical Sciences (IBS) Program, the Department of Molecular & Cellular Biochemistry rarely admits students directly, but joins with Neuroscience, Microbiology, Immunology & Molecular Genetics, Pharmacology & Nutritional Sciences, Toxicology & Cancer Biology, and Physiology in the admission and teaching of doctoral students in their first year. The IBS manual should be consulted for further details on admission policy and graduate study during this first year.

In their first year of study (in the IBS program), students are not committed to an individual Department and may explore research opportunities with any of the participating graduate programs. During this period all students will have multiple opportunities to meet with BCH faculty and, through the rotation system, the chance to do lab rotations with members of the Department. At the conclusion of their first academic year, students are permanently transferred to one of the participating departments. Entry into the Department of Molecular & Cellular Biochemistry will usually require that:

- The student selects a research mentor with an appointment in the Department
- The selected mentor agrees to support and oversee the training of that student
- The BCH Chair and Director of Graduate Studies (DGS) approve the admission of the student
- The student be in good standing with respect to Graduate School and Departmental academic standards (described below)

Exceptions to these requirements can be made with the approval of the faculty of the Department on an *ad hoc* basis.

Transfer students. Transfer into the BCH PhD program from another program or school requires the approval of the Chair and DGS of BCH. If the student has been awarded a master's degree from the University of Kentucky or another accredited school, up to 18 credits hours may be used to

partially satisfy the 36-hour pre-qualifying residency requirement. This requires approval from the Dean of the Graduate School. Students with extensive prior graduate work may request a waiver of additional pre-qualifying residency hours. This request should be made to the DGS who will evaluate the applicability of the prior graduate work to the BCH program and then forward a request for a waiver to the Graduate School. Such requests require the support of the student's mentor and the student's Dissertation Committee.

If the prior graduate work has not led to an advanced degree only 9 credit hours can be applied to the 36 credit-hour pre-qualifying residency requirement. The following Graduate School rules apply:

- *Course credits applied toward a previously awarded graduate degree cannot be transferred*
- *Transfer of independent work, research, thesis or dissertation credit is not permitted*
- *Short courses lasting fewer weeks than the number of credits may not be transferred*
- *A student must have been in graduate status at the time the courses were taken in order for the courses to be transferable*
- *A student must be in good academic standing at the time of the transfer*
- *Only courses assigned a B grade or better can be transferred*
- *Courses must have been taken no more than 8 years prior to the semester the transfer is requested.*

In addition, the DGS, in consultation with the student's intended mentor, will determine whether any of the pre-transfer coursework can be used to substitute for the specific course requirements for the BCH doctoral degree.

COURSE REQUIREMENTS

First year

In the first year of study, all students will usually take the classes listed below as part of the IBS program. See <https://graduate.med.uky.edu/ibs-curriculum-overview> for an up to date list.

Fall	IBS601: Biomolecules and Metabolism
	IBS602: Molecular Biology and Genetics
	IBS607: Seminar in Integrated Biomedical Sciences
	IBS609: Research in Integrated Biomedical Sciences
	IBS610: Critical Reading / Small Groups
	IBS611: Practical Statistics Applications
Spring	IBS603: Cell Biology & Cell Signaling
	IBS606: Physiological Communications
	IBS607: Seminar in Integrated Biomedical Sciences
	IBS609: Research in Integrated Biomedical Sciences
	IBS608: Special Topics in IBS
	TOX600: Ethics in Scientific Research

With the prior approval of the IBS oversight committee, students with exceptional training have the opportunity to opt out of one or more of the lecture classes.

Second year

In their second year, students take coursework designed to provide additional training in modern biochemistry and its experimental approaches, particularly in, but not limited to, areas relevant to the student's research. The coursework is chosen after consultation with, and with the prior approval of, the student's research mentor and Dissertation Committee (see below). Every student will take BCH 618/619 (see below) and BCH 625 Scientific Communications. Students **must** take two additional courses of three or more credit-hours at the 600 level or above selected from the advanced courses offered by the Department. Those courses currently are:

- BCH 604 Structural Biochemistry & Molecular Interactions (formerly Structural Biology)
- BCH 610 Structure & Function of Biomembranes
- BCH 611 Biochemistry & Cell Biology of Nucleic Acids
- BCH 612 Structure & Function of Proteins & Enzymes

Students may take additional coursework with the approval of their Dissertation Committee.

After entry into the BCH program, students are also **required** to participate in the Departmental student seminar course (BCH 618/619) every semester until graduation. As part of this participation, the student presents an annual seminar during either the Fall or Spring semesters as assigned by the course director. Students are also required to attend and participate in the evaluation of the seminars of their fellow students. A letter grade is assigned for this course for students that have not yet passed their Qualifying Exams. After passing the qualifying exam, students *do not register* for BCH 618/619 but are expected to fully participate in all course activities.

To be considered full-time, students **must** be enrolled in 9-12 credit-hours of courses each semester until they have passed their Qualifying Exams. If the total credit-hours of the required (and any optional) courses the student has registered for is less than nine, they should enroll in sufficient credit-hours of BCH 640 to make up the difference.

Students in good standing normally participate in the written and oral Qualifying Exams at the end of the second year/beginning of third year (see below for details). During the Fall semester in which they are completing the Qualifying Exams, and every semester thereafter until they graduate, students should enroll in two credits of BCH 767 (and nothing else). *Should a student not pass their Qualifying Exams within the first six weeks of that Fall semester or earlier, they will need to be withdrawn from BCH 767, register for 9 credit-hours of BCH 640, and the student's mentor will be required to pay tuition for the semester.* Each student's Dissertation Committee will provide advice with respect to courses, set individual requirements, and evaluate each student's performance each year and inform the student, DGS, and the faculty of his or her progress.

University standards. Students must register for 9-12 credit hours each semester to be considered full-time. Each student must obtain prior approval from the DGS for all matters dealing with curriculum beyond normal course registration (e.g. course additions or drops). Satisfactory work in the classroom is defined by the University in the Graduate School Bulletin. Note that graduate students must maintain a GPA of 3.0 or better in all credited activities (class, seminar, or laboratory). If the cumulative grade point average, calculated at the end of each semester, falls below a B average, the student is placed on academic probation. Students on academic probation are not eligible for out-of-state tuition scholarships from the Graduate School. The student has one semester to raise his or her average to a B. Failing that, he or she is automatically dismissed from the Graduate Program. This applies to students at all stages of Ph.D. studies.

Departmental standards. The Department of Biochemistry expects its graduate students to perform above the minimal standards set by the university. Specifically:

- Students must obtain a grade of "B" or better in both IBS 601 and IBS 602.
- Students are allowed a grade lower than a "B" in only one credited activity (class, seminar, or laboratory) during their graduate career. Grades of "C" or lower in two or more credited activities are grounds for dismissal from the Program. This applies even if the student has retaken the course/activity in which the initial "C" was obtained and received a higher grade.
- Students must obtain a "B" or better in the three advanced courses (600 level or higher) that students take after joining the Department (see above). If a "C" is obtained in any of these courses the student must subsequently obtain a "B" or better in the same course.
- Ratings of "inadequate progress" in two consecutive Dissertation Committee meetings will be considered grounds for dismissal from the Program.
- All students must give an annual seminar to the Department in the Student seminar course.

In addition, the Department expects the student to maintain a level of scholarship and research productivity that is satisfactory to the student's mentor and Dissertation Committee. Failure to meet any of these expectations is grounds for dismissal from the Program. Decisions on dismissal are made by the Chair and DGS of the Department in consultation with the student's mentor and Dissertation Committee.

THE DISSERTATION COMMITTEE

Shortly after entering the BCH Program, the student and his or her mentor will assemble their Dissertation Advisory Committee (referred to as Dissertation Committee in this document). This committee consists of the dissertation director (student's mentor), two additional BCH faculty members and one member from outside the Department - in all, no fewer than four. **At least three of the members must be full members of the Graduate Faculty;** the remaining may be full or associate members. A listing of the Graduate Faculty can be found at <https://ris.uky.edu/cfdocs/gs/dgsgradfac/>. **Once the faculty have agreed to be members of the student's committee, the student then initiates the committee formation by filling out an on-line committee request form that can be found on the Graduate School's web site under the "Graduate School Forms" link.**

The dissertation director (the student's mentor/PI) serves as chair of the Dissertation Committee. If the dissertation director is an Associate member of the Graduate Faculty, a Full member must serve as co-chair of the Dissertation Committee. A database of all members of the Graduate Faculty can be found on the Graduate School web site (see above for link). Faculty who are not in that database cannot be appointed to a Dissertation Committee until such time as they are made members of the Graduate Faculty.

This Committee is responsible for ensuring that the Department's and University's standards for graduate education are met. They have the specific duties of (1) reviewing the student's records relevant to their educational pursuits, (2) setting requirements that the student must meet before taking the qualifying examination, (3) administering the Qualifying Exam, (4) setting any additional requirements that must be met after passing the Qualifying Examination, (5) monitoring and evaluating the student's progress during their time as dissertators, and (6) administering the dissertation defense. **At a minimum, the Dissertation Committee should meet annually.** It is the responsibility of the student to schedule this annual meeting. At the conclusion of each meeting, the Committee chair will fill out all requested information on the Departmental committee meeting report form (template is found on the Department web site on the "PhD Program" page), which must be signed by all committee members, discussed with the student, and then given to the DGS, noting especially the consensus opinion of the student's progress and any actions taken by the committee regarding requirements that the student must satisfy to continue in the Program.

QUALIFYING EXAMINATION

The BCH Ph.D. Qualifying Examination consists of a written proposal, a written examination, and an oral examination. The student must take 36 credit-hours of graduate coursework *before* being permitted to undertake the Qualifying Examination process. Normally, this occurs in the Summer following the second year or the Fall of the third year for students that have taken a full courseload (9 credits each semester). Unless an extension is granted by the Dean of the Graduate School, the student will be dismissed if the Qualifying Exam is not passed within 5 years of enrolling in the graduate program. As administered by the Department of Molecular & Cellular Biochemistry, the Qualifying Exam can be divided into three distinct steps:

Step I. During the second year, each graduate student - in consultation with his/her mentor - develops a topic and direction for a dissertation proposal. The student should develop these into written *Background and Specific Aims*. The *Specific Aims* concisely (one page or less) state the major **scientific** goals to be accomplished (it should not be a statement of methods). The *Background* (5 page maximum recommended) should provide appropriate information that allows the Dissertation Committee members to understand the scientific problem to be examined and appreciate its significance. The *Background and Specific Aims* are expanded into a dissertation proposal that is written in the NIH grant format (10 page maximum, including any figures, but not including the references). In addition to the *Background and Specific Aims*, the full proposal should include descriptions of:

- relevant preliminary results (if any) obtained by the student
- the experimental approaches that will be taken to achieve the specific aims (including an evaluation of reasonable alternative methods)
- the results that are expected
- how the results will be analyzed or interpreted
- alternative results that could also be (reasonably) obtained and their interpretation
- a bibliography (not included in the ten page limit)

Although the topic and direction of the proposal should be developed in consultation with the student's mentor, the exercise of writing that proposal is the responsibility of the student. The finished proposal must be approved by a majority of Committee members. Unapproved proposals are returned to the student for rewriting. This process can be repeated until the Committee approves the proposal. Students may not proceed to the next step until the proposal has been approved by their Committee.

Step II. All graduate students are required to take a written examination prior to the oral exam. This examination is derived from questions submitted by Committee members. These questions examine the ability of the student to perform, evaluate, and troubleshoot the research described in his/her written proposal. As with the oral exam described below, the questions can be directly related to the proposed research or can examine the student's breadth of knowledge in related biochemical topics. A majority of Committee members must pass the student. A student failing this exam can retake it **once** (with different questions) at a time to be set by the Committee.

Step III. Once the written exam has been passed, and not before, the student is required to take an oral examination. An oral exam is required by the Graduate School, so the following rules apply to this exam:

[A] request to schedule the Qualifying Examination should be submitted [to the Graduate School] at least two weeks prior to the date of the examination. Before scheduling the Qualifying Exam, all requirements for the degree should be completed (except the final exam and dissertation.) Students

with “I” grades or “S” grades in credit-bearing courses will not be allowed to sit for the Qualifying Examination until letter grades are assigned for these courses.

The request to schedule the Qualifying Examination is automatically forwarded to the DGS, who will ascertain whether all required coursework has been completed satisfactorily, including participation in the seminar course (BCH618/619), and whether the student has received passes on the written portions of the qualifying examination from a majority of the Committee.

The Qualifying Examination card will be sent electronically to the DGS prior to the date of the examination. No exam should commence without a card. All members of the Doctoral Advisory Committee must be present at the oral qualifying examination. The results of the examination must be reported by the DGS to The Graduate School within 10 days of its conclusion. A majority vote is required to pass this examination. If the result is failure, the Dissertation Advisory Committee determines the conditions to be met before another examination may be given. The minimum time between examinations is four months. A second examination must be taken within one year after taking the first examination; a third examination is not permitted. If a student fails the qualifying examination on the first attempt, the Dissertation Advisory Committee may not be changed prior to re-examination without approval of the Dean of the Graduate School. Students are admitted to candidacy for the doctoral degree after they have successfully completed the Qualifying Examination; the date is noted on the transcript.

The purpose of this exam is to address, in a more open environment, perceived weaknesses or deficiencies exposed in the written examinations. Students will be given ample opportunity to examine the results of their written test and it is anticipated that the basis for questions for this oral exam will, in part, be derived from evaluation of the written exam. Questions generally begin with topics closely related to the proposed research and can subsequently expand to spheres only remotely bordering his/her research area.

Important Note: if the Oral Exam is not passed by the end of the Fall semester this means the mentor will have to pay for a semester of tuition.

DISSERTATION RESEARCH

All students passing the Qualifying Exam need to register for 2 credits of BCH 767 (and *nothing* else) every Fall and Spring semester until they graduate, starting with the semester in which they pass (typically the beginning of their third year). The qualifies as being “full-time” for those students who need to maintain this status (e.g. international students and those students receiving certain scholarships or fellowships).

Publication requirement. Because of the recognized importance of publications as a measure of a successful graduate career and for the ability of the student to compete for future positions, the Department requires that students to have at least one first author, peer-reviewed research paper (not a review) published or submitted for publication before the student can submit the Notification of Intent to Schedule a Final Doctoral Examination form. Requests for exceptions to this policy by the student or the student’s mentor should be brought to the attention of the DGS, who after consulting with the student, the student’s mentor, and the members of the student’s Dissertation Committee, will recommend to the Department Chair whether or not to allow the requested exception. The Chair will then make a final decision and transmit the decision to the DGS, the student, the student’s mentor, and the members of the student’s Dissertation Committee.

DOCTORAL FINAL EXAMINATION

The following rules for the final examination are set by the Graduate School and *must* be adhered to:

Application for degree. *To be eligible to receive a degree, doctoral students must submit an on-line "Application for Degree" form. Applications must be received in the Graduate School within 30 days of the start of the semester in which the student expects to complete their work (or within 15 days of the start of Summer Session II).*

Notification of Intent to Schedule a Final Doctoral Examination (NOTIF). *The Graduate School must receive a "Notification of Intent to Schedule a Final Doctoral Examination" form in order to initiate the doctoral final examination process. The "Notification of Intent" form must be submitted to the Graduate School at least **eight weeks** before the exam is to be scheduled. Upon submission of the form, the Dean of the Graduate School appoints an Outside Examiner. Note that the minimum eight week lead time is required to secure a suitable outside examiner and to perform the necessary audit of the student's academic record (a student will not be allowed to sit for the Final Examination until any remaining "I" or "S" grades in credit-bearing courses have been assigned letter grades).*

The NOTIF is automatically sent to the DGS by the Graduate School. At this time, the DGS will ascertain whether all BCH Program requirements have been met before approving the NOTIF. Of particular importance at this stage are the following:

- Has the student received approval from the mentor and the Dissertation Committee to file the NOTIF?
- Has the student given required annual seminars to the Department?
- Has the student, barring excused absences, attended the bulk of the BCH618/619 seminars?
- Has the student published, or submitted for publication, as primary author a paper in a peer-reviewed journal describing at least some of the student's research findings?

If there are unsatisfied Program requirements, the DGS will inform the the student of the deficiencies and what is needed to correct them. The NOTIF will not be approved until these deficiencies have been corrected.

The Outside Examiner. *The Graduate Dean will independently appoint the outside examiner to the Final Examination Committee. Care will be taken to appoint outside examiners who have some understanding of and interest in the topic of the dissertation. When the Notification of Intent is submitted, the DGS or advisor should identify two or more programs whose members are likely to satisfy these conditions. When feasible, the appointment will be made from one of these programs. The Graduate School will not appoint a particular outside examiner on the basis of a student's (or Committee's) desire to hold the Final Examination on a specific date, or at a specific time. For selected dissertations, the Dean of the Graduate School may appoint a faculty member from another institution to serve as the outside examiner (see Visiting Distinguished Faculty program). The role of the outside examiner on the Final Examination Committee includes (a) assurance that only qualified candidates receive degrees and (b) assurance that the examination is administered in a fair, impartial and professional manner.*

Request for Final examination. *Following the appointment of the Outside Examiner, the final examination date may be set by submitting the "Request for Final Examination" at least two weeks before the scheduled date for the Final Exam. The Graduate School will send announcements of the examination to each committee member and to the student. Doctoral Final Examinations may only be scheduled when classes are in session (Fall and Spring semesters, 4- and 8-week summer sessions). Requests for exceptions to this policy should be submitted by the DGS to the Senior Associate Dean. Examination and degree conferral deadlines can be found in the University Calendar.*

The student should submit identical, final drafts of their dissertation to each of their Dissertation Committee members, including the outside examiner appointed by the Dean of the Graduate School, at least three weeks prior to the scheduled examination date. Each committee member should independently judge whether the dissertation is defensible and communicate their decision to the DGS. The DGS will approve the Request for Final Examination only when a majority of the committee have agreed that the dissertation is defensible.

The following are Graduate School procedures for conducting the Final Examination:

- *At the outset of the Examination, the DGS or committee chair should verify that the Examination Card has been brought to the examination room. If this is not the case, the committee chair or DGS must call the Senior Associate Dean's office at the Graduate School (257.7126) to determine if the examination may proceed.*
- *The Examination may not begin until all voting members of the committee are present (these names are listed on the examination card).*
- *One or more members of a master's or Dissertation Committee may participate remotely in an Examination if a video-conference connection can be established (this option does not apply to the Outside Examiner assigned to final doctoral defenses). The DGS should identify the committee members participating in this fashion on the qualifying or final examination request form. Under exceptional circumstances, the remote participation option may also be extended to the student.*
- *An Examination may be cancelled prior to its official start for substantive reason with no permanent consequences for the student. The student has not failed the examination in this case because it was never officially begun. Substantive reasons can include a missing committee member, a sudden difficulty in the candidate's personal life that may affect performance, or a (late) opinion on the part of one or more committee members, for example that the dissertation is not ready to defend. In such cases, the committee may hold an open or closed discussion to review the issues at hand and reach a decision on whether to hold the examination or not. Furthermore, the candidate does have the right to cancel the examination prior to its start. If the examination is cancelled, it must be formally re-scheduled with the Graduate School in the standard fashion. A minimum two-week interval is required for re-scheduling the examination.*
- *Once the examination has begun, all committee members must remain present for the duration of the process. In cases in which a committee member is participating remotely, if the connection is lost, the examination process should be immediately suspended and not re-started until connection is again fully established.*
- *Once the examination has begun, it must be carried through until its end. A formal vote must be taken and recorded on the examination card, along with the signatures of all (voting) members. There are only two outcomes possible; by majority vote, Pass or Fail. The examination may not be suspended for an extended period to permit the candidate to correct deficiencies, and subsequently re-convened. The only suspensions permitted are short ones to permit the candidate or committee members to refresh themselves.*

- *If an emergency situation should arise during the course of an examination, the committee chair or DGS should immediately call the Graduate School (257.4905 or 257.1759) to seek guidance.*

¹ *Remote participants may record their vote in one of two ways; a copy of the examination card may be faxed/e-mailed to them for decision and signature and returned to the DGS OR they may e-mail Dr. Cleo Price directly with their vote at cprice@uky.edu.*

It is not unusual for the committee to stipulate changes that need to be made to the examination copy of the Dissertation before it can be submitted to the Graduate School. The student's mentor is responsible for ensuring that these changes are made. It is the student's responsibility to make sure that they are made within a reasonable period after the completion of the exam. *The final copy of the dissertation must be approved by the Graduate School within 60 days of the Final Examination or on the last day to present a dissertation for a graduating candidate, if a specific graduation date is desired. Failure to present the dissertation within 60 days may result in the student having to be re-examined. Requests for exceptions to the 60-day policy should be in the form of an e-mail from the student's advisor to the Senior Associate Dean. All doctoral dissertations must be submitted in electronic format. Instructions are available at*

<https://gradschool.uky.edu/thesis-dissertation-preparation>.

These instructions include the **ETD Approval Form for Thesis or Dissertation** that needs to be submitted with the final copy of the dissertation. It is advised that the final copy of the dissertation be submitted well in advance of the 60 day period noted above. It is not unusual for the Graduate School to return a dissertation for reformatting. This form also includes an option to “**embargo**” the dissertation. This option prevents public release of the Dissertation for up to two years in the event that the dissertation contains sensitive intellectual property. ETD submission and embargo procedures are described in the attachment to the ETD approval form.

FINANCIAL SUPPORT

Financial support is given to all qualified graduate students pursuing the Ph.D. degree full time in the Department of Molecular & Cellular Biochemistry. In addition to an annual stipend, the Department will also pay the student's tuition, standard university fees, and health insurance. The stipends are given with the understanding that the student will not take on secondary employment (whether paid or not) without the approval of the DGS and their mentor during their graduate career. Secondary employment will normally result in the loss of financial support from the Department. Students are expected to cooperate with the DGS and their mentor in applying for outside financial support (grants, fellowships, etc.) when requested.

Financial support is guaranteed only to students that remain in good standing in the program. A student's academic performance in course work and in laboratory investigation is monitored periodically. If performance in either category is found to be unsatisfactory (as defined by the DGS or the student's Dissertation Committee, as appropriate), financial support to that student can be terminated with an advance notice of 60 days.

Students with special qualifications may be awarded bonuses that augment the standard stipend.

Tuition

Students awarded a research assistantship or fellowship through IBS receive payment of tuition, both in-state and out-of-state. Students are guaranteed payment of tuition related to their doctoral programs subject to the following conditions:

(1) The coursework for which the student has registered has been approved by the IBS director during the IBS year, and by the chair of their Dissertation Committee and DGS of their program, once they have entered a doctoral program.

(2) The student is in good academic standing. Effective Fall 2007, students who have been notified by the Graduate School that they are officially on academic probation will be responsible for payment of in-state tuition charges while they remain on probation. During this time, out-of-state tuition will be paid by the PI/program for out-of-state students. Once they have raised their GPA to the required 3.0 to regain good academic standing, payment of any future tuition charges will be covered by their PI and/or program, subject to condition #1.

(3) Tuition costs for additional coursework beyond the 36 credit hours taken in the first two years and the two credit hours of BCH 767 taken by post-qualifying students each semester until graduation will normally not be paid by the Department. Costs associated with this additional coursework will be the responsibility of the student or, when the additional coursework is required for their research, the student's mentor.

Notes:

- 1) Text in *italic Arial* is taken directly from the UK DGS manual distributed by the Graduate School. They describe rules and procedures that apply to all UK graduate programs.
- 2) The online forms described in the preceding pages can be found at:
<https://gradschool.uky.edu/studentforms>
- 3) The Graduate School web site can be found at:
<https://gradschool.uky.edu>
- 4) The IBS web site can be found at:
<https://graduate.med.uky.edu/integrated-biomedical-sciences>