

**UNIVERSITY OF CALIFORNIA - RIVERSIDE  
GRADUATE PROGRAM IN BIOCHEMISTRY AND MOLECULAR BIOLOGY**

**REQUIREMENTS FOR THE Ph.D. DEGREE IN BIOCHEMISTRY AND MOLECULAR  
BIOLOGY (BCMB) Graduate Program**

Each student in the Ph.D. program will appoint a Faculty Advisory Committee once they have chosen a permanent research director (Major Professor) to direct their laboratory research. This committee consists of three BCMB Graduate Program faculty members, and will be chaired by the student's research director. The committee is responsible for advising the student about academic matters including course selection, and oversight of the student's research progress.

**I. Entrance Requirements (Other than Biochemistry)**

A. The following courses offered at UCR (3 quarters per year) or their equivalents in content are prerequisites to enter the program:

1. Calculus; Math. 009A-009B-009C
2. General Physics; Physics 002A-002B-002C
3. Organic Chemistry; Chem. 12A-12B-12C
4. Physical Chemistry; Chem. 109 (or Chem. 110A)
5. Cell & Mol. Biology, Organismal Biology; Biol. 5A-5B
6. Two courses of upper division Biology plus one course in Genetics

B. If these courses are not taken prior to entrance to the program, they are considered deficiencies which should be completed as soon as possible. The Graduate Advisor will determine which of the above course deficiencies must be taken by students in the Ph.D. program.

**II. Biochemistry Ph.D. Course Requirements**

A. The following courses offered by the Biochemistry Department, or acceptable substitutes (determined by the Graduate Advisor when the student joins the program), are required:

1. Biochemistry 110A-110B-110C; General Biochemistry
2. Biochemistry 162; or the equivalent research experience
3. Biochemistry 184; Topics in Physical Biochemistry
4. Biochemistry 210; Biochemistry of Macromolecules
5. Biochemistry 211; Molecular Biology
6. Biochemistry 212; Signal Transduction.
7. At least one advanced course taken from the Biochemistry 230 series
8. Elective Course Requirements.

The elective courses consist of at least 9 units of graduate or upper division undergraduate course work in the sciences. Electives must be chosen in consultation with the student's Faculty Advisory Committee. **No courses taken while an undergraduate can be used to satisfy this requirement.** Courses taken to satisfy deficiencies at the time of admissions cannot be counted toward the elective course requirements. The responsibility for ensuring the relevance of the electives taken is delegated to the student's Faculty Advisory Committee.

9. BCH 252 General Seminar in Biochemistry

This course must be taken every quarter, when offered. Exceptions to this rule may be made by petition to the Graduate Advisor in cases where the General Seminar in Biochemistry conflicts with the student's Teaching Assistant responsibilities.

10. BCH 250 Oral Presentation in Biochemistry

This course must be taken prior to Advancement to Candidacy. Students usually take this in the first or second year of the program.

11. BCH 251 Graduate Seminar in Biochemistry

One formal oral presentation is required in the student's first four years in the program.

12. A final defense is required upon completion of the dissertation research

13. BCH 240 Special Topics in Biochemistry

This course is required each quarter in residence except the first quarter. The course consists of the laboratory group meeting of the student's Major Professor.

### III. Other Requirements

- A. Successful completion of the Initial Research Evaluation prior to the beginning of the fourth quarter.
- B. Successful performance in the Written Comprehensive Examination administered in June of the 1<sup>st</sup> year.
- C. Preparation and defense of a Research Evaluation Report (RER), before the end of Fall Quarter of the third year (see description concerning the RER in this document.) This constitutes the Oral Qualifying Examination for Advancement to Candidacy.

After successful completion of Sections I and II, and Steps A, B, and C of Section III, the student is advanced to candidacy.

- D. Service as a Teaching Assistant for at least two quarters. Students whose native language is not English must pass the SPEAK test (administered by UCR Extension) before they are eligible to serve as a TA.
- E. After advancement to candidacy, satisfactory performance in the Annual Research Appraisal (ARA).
- F. Maintenance of a 3.00 grade point average overall as well as a 3.00 GPA in Biochemistry Department courses while in the program.
- G. Participation in the annual program symposium. Each student will be required to make an oral presentation (as selected by the Graduate Advisor) or a poster presentation of their research.
- H. Submission and defense of an acceptable dissertation.

### **SEMINAR REQUIREMENTS**

Attendance is required at every BCH 252 seminar. Research reports on missed seminars may be required.

At least one formal seminar is to be presented. Prior to giving this seminar, students are required to complete Oral Presentations in Biochemistry (BCH 250), which is normally taken in the Fall Quarter of the second year. The seminar will be presented as part of the General Seminar in Biochemistry (BCH 252) series. The student will enroll in BCH 251 instead of BCH 252 that quarter. The responsibility for evaluation of the student's presentation lies with the instructor in charge of the BCH 252 seminar series in the quarter in which the seminar is presented. Usually, this seminar will be critiqued by two graduate students and the seminar coordinator.

Each first-year student should critique one seminar during their first year.

All students should seek advice from the seminar coordinator about the details and topic for the presentation.

### **SELECTION OF A RESEARCH ADVISOR**

The Research Advisor should be selected by the end of the student's second quarter in residence in the Ph.D. program. Laboratory research should start at least by the beginning of the third quarter in residence.

It is the BCMB Program's policy to provide students with as many laboratory choices as possible within the limitations imposed by resources, the availability of laboratory space, and the distribution of faculty workloads. Students entering the BCMB Graduate

Program will meet with faculty having an opening in the laboratory to discuss research interests and potential research projects leading to a dissertation. The student is expected to engage in a detailed and comprehensive investigation of each laboratory within the field of interest that has declared openings for a new Ph.D. student. This includes visiting the laboratory and meeting laboratory personnel.

Students will do two five-week laboratory rotations per quarter, in Fall and Winter, for a total of four rotations. It is expected that a lab will be decided on by the end of Winter Quarter by mutual agreement between the student and a BCMB faculty member. If a laboratory is chosen before the end of the Winter Quarter, the student can stop rotating. Conversely, a student can do two more rotations in Spring Quarter if a laboratory is not identified, although this is not encouraged. Students also have the option of a single ten-week rotation, although this can limit the choices available at the end of the rotation period.

In a few cases, students may enter the program pre-committed to a Research Advisor. In these cases, they will begin research in the chosen laboratory immediately.

Following the choice of a Research Advisor, the student, in consultation with the Research Advisor, will select two faculty members in areas related to the student's research to serve as members of a three-person Advisory Committee. At least one of these two individuals must be a member of the BCMB Graduate Program faculty. After advancement to candidacy, a three-member Dissertation Committee will be formed, which may consist of the same or of different faculty. One member of the Advisory or the Dissertation Committee may be from outside of the BCMB Graduate Program and be appointed in another department on campus.

#### **GENERAL POLICY FOR GRADUATE STUDENTS WISHING TO CHANGE RESEARCH ADVISORS**

Following assignment of a first-year graduate student to a Faculty Advisor, the student is expected to remain under that Faculty Advisor's guidance until the completion of their Ph.D. degree. If a situation arises where either a student or a student's Research Advisor decides that the student should leave that laboratory, the Graduate Advisor should be informed immediately. If, following discussions with the Research Advisor, the student, and the other members of the student's Advisory Committee, the Graduate Advisor decides that it is in the best interest of all concerned for the student to change laboratories, the Graduate Advisor will advise the student to begin the search for a new Research Advisor. The responsibility for locating a new laboratory, with available funding, ultimately rests with the student.

## CHECK LISTS

### GRADUATE STUDENT ADVISORY COMMITTEE MEETINGS

- ✓ Set up a tentative course schedule for the academic year.
- ✓ Work out dates for the appropriate review of the student's progress.

After the IRE and each ARA, the chair of the student's Advisory Committee must submit to the Graduate Advisor the IRE or ARA form evaluating the student's progress in the Ph.D. program. A copy of this form will be sent to the Graduate Division and a scanned copy placed in the electronic student file.

**Please note the following:**

All full-time students should be enrolled in at least 12 units each quarter. These units can include the following courses:

- ✓ BCH 291 - Independent Studies: used to supplement BCH 297 when preparing for oral qualifying examinations (1-6 units).
- ✓ BCH 297 - Research before advancement to candidacy (1-6 units).
- ✓ BCH 299 - Research after advancement to candidacy (1-12 units).
- ✓ BCH 302 - Apprentice Teaching: Teaching Assistants should be enrolled for credits for each quarter of service with the lead instructor for the course (1-4 units).
- ✓ Each Ph.D. student must enroll in 2 units of BCH 240 (Lab Group Meeting) each quarter in residence with their Faculty Advisor.
- ✓ Each Ph.D. student must enroll in BCH 252 each quarter (when offered). If there is a course conflict the student must request a waiver of the requirement from the Graduate Advisor in writing (via e-mail is fine).
- ✓ BCH 261, the interdepartmental Visiting Speaker Seminar Series in Molecular Biology, is optional.

### THE INITIAL RESEARCH EVALUATION

The Initial Research Evaluation will take place prior to the beginning of the fourth quarter (usually in September prior to the beginning of the second year). The student

will prepare a document according to the guidelines of the Annual Research Appraisal and will meet with his/her advisory committee to discuss the research accomplished since assignment to the laboratory of the Major Professor. The committee will provide a written evaluation to the Graduate Advisor as to whether the student is making adequate progress in research.

### THE WRITTEN COMPREHENSIVE EXAMINATION

**Comment [d1]:** These new policies come from the updated catalog copy approved last spring.

At the end of the first year, and no later than the end of the second year, students take a comprehensive written qualifying examination consisting of material from BCH 210, 211 and 212. The Graduate Advisor compiles the examination based on questions submitted by the instructors of the courses listed above. The examination will be held during the morning of a single day in June. All students will answer the same questions and will take the examination at the same time. Students will not be awarded more time if they arrive late to the examination.

Students must sit the comprehensive written examination within the first two years in the program. An unexcused failure to sit the examination will be regarded as a failure. No student will be given more than two attempts to achieve a satisfactory grade on the comprehensive written examination.

In exceptional circumstances only, a student may be excused from sitting the examination by prior appeal to either the Graduate Advisor or Departmental Chair.

After the examination is graded, the faculty as a whole will be responsible for the determination of what constitutes a passing grade. Both grading and the determination of the passing score will be done "blind," i.e., with the examinations coded by number and not identified by name.

If any student fails the written comprehensive examination for the first time, the re-examination will be administered in a sitting during the following November. The Graduate Advisor is responsible for compiling the second examination and the grading and evaluation process will be the same as before.

Results of the written and oral examinations must be reported to the Graduate Dean after each attempt (on Ph.D. Form 3).

Only two attempts to pass the examination are allowed.

### THE ORAL QUALIFYING EXAMINATION

After passing the Written Comprehensive Examination, and prior to the end of the Fall Quarter of the third year, the student will take the Oral Qualifying Examination for advancement to candidacy. This examination will be based on a document, the Research Evaluation Report, prepared by the student according to the guidelines in this

handbook. This document will be provided to the committee at least one week prior to the examination.

The Oral Qualifying Examination Committee will normally be comprised of four faculty members of the BCMB Graduate Program, and one faculty member from outside of the BCMB Graduate Program. The student's PI will serve as the chair of the committee. The proposed committee membership should be sent to the Student Services Advisor at least three weeks prior to the date of the examination. The Student Services Advisor will prepare the nomination form and Departmental Report of Requirements forms and obtain the Graduate Advisor's signature before submitting the documents to the Graduate Division for final approval.

The Committee will examine the student using the document as a basis for the examination, but areas of inquiry will not necessarily be limited to the document itself. The goal of this examination is to assess the ability of the student to:

1. Write the Research Evaluation Report clearly and concisely.
2. Carry out intelligent and productive research.
3. Project the future of his/her research project, make creative/innovative proposals as to completion of the project, and bring the work to a publishable conclusion.
4. Have a sophisticated understanding of the conceptual framework of the project and the state of the scientific literature pertaining to his/her research.

The results of the Oral Examination will be reported directly to the Graduate Division.

It is the responsibility of the student to:

1. Provide the committee members with a copy of the Research Evaluation Report at least one week prior to the examination.

Provide a copy of the Research Evaluation Report to the Graduate Advisor in the form of an e-mail attachment to the Student Services Advisor.

2. Arrange a mutually agreeable time for the examination (allow three hours).
3. Reserve a room for the meeting.
4. Send a reminder notice of the meeting several days in advance.

### **ADVANCEMENT TO CANDIDACY CHECKLIST**

- Complete BCH 211, 212, 210 and 230
- Complete BCH 162, 110A, 110B, 110C and BCH 184, or received written waivers based on previous equivalent coursework as an undergraduate.
- Complete 9 units of elective coursework.
- Complete BCH 250.
- Maintain at least a 3.0 overall grade point average, and a 3.0 grade point average in Biochemistry coursework.
- Pass the written comprehensive examination
- Complete the other Departmental Report of Requirements – see the Student Services Advisor to complete the form.

### **ADVANCEMENT TO CANDIDACY**

Before being advanced to candidacy, the student must complete all University and program requirements (except for completion of the dissertation and its final oral defense, and certain seminar and teaching requirements) and pass a series of written and oral qualifying examinations, as detailed above.

After successful completion of the qualifying examinations and completion of all university and graduate program requirements, the student is advanced to candidacy. After the degree check has been completed, the student will be billed the Candidacy Fee. The student and Student Services Advisor will be notified of the advancement to candidacy via e-mail from the Graduate Division.

### **DESCRIPTION OF THE RESEARCH EVALUATION REPORT**

The Research Evaluation Report will be prepared according to the following specifications. It will contain:

1. A general introductory section concisely summarizing previous work in the field, leading into a more specific discussion of the literature directly pertinent to the project (from the scientific literature and from others in the student's laboratory).



2. Aims and objectives of the project and its relevance to the current status of the field.
3. Methods used and results obtained since matriculation. All tables and figures should be prepared in a manner similar to that found in a biochemical journal (e.g., Journal of Biological Chemistry or Biochemistry).
4. Discussion of these results and their interpretation and application to the current status of the field.
5. Identification and discussion of future objectives of the research project to complete the Ph.D. degree, in the light of the results already obtained.
6. Presentation of a general methodological approach to future experiments designed to complete the project (this projection should not be so great as to be impossible to complete within approximately two years).
7. Approximately 15-25 typewritten pages (double spaced) in addition to graphs, tables, figure legends, etc. All pages must be numbered.

The student is expected to provide the report (either electronically or hard copy) to the committee **AT LEAST ONE WEEK BEFORE THE EXAMINATION DATE**. The report must be submitted electronically to the Student Services Advisor.

See the following pages for additional comments on the Research Evaluation Report.

### COMMENTS ON THE RESEARCH EVALUATION REPORT

**Purpose:** The basic premise of the Research Evaluation Report is that it is an examination in which the student has the opportunity to demonstrate to all members of the Faculty Advisory Committee that he/she is capable of independently designing and performing experiments, interpreting the data, and projecting a program of research that eventually will lead to a dissertation. The Report should, therefore, be prepared entirely by the student without extensive consultation with the Major Professor. In those instances where a student's research is contained in a publication from the advisor's laboratory, extreme care should be exercised to prepare the Research Evaluation Report independently of the published paper, and to utilize only the data actually obtained by the student and not use the narrative in the published paper.

**Contents:** The Research Evaluation Report should include experimental results obtained only by the student. It should not be a representation of the state of the art in the laboratory of the student's Research Advisor. If it appears necessary to refer to work of other members in the laboratory this may be done in the introduction or in the discussion. A general concept of what the report should contain might best be reflected by viewing it as an original research paper or a dissertation-like exercise, as distinct

from a review article in which one would also refer to experimental data of other workers.

**Concerning the more specific contents of the report, its main emphasis should be three fold:** (a) a succinct description of the methodology, (b) a clear representation of the results, and (c) a combination of a discussion of these results and the student's proposal as to how to extend this work into a dissertation project.

This should be preceded by a brief introduction describing the state of the art in the topic area and an outline of the attempted goals for the student's project. This introduction, however, should not be a lengthy review of the literature.

**Length:** As a general guideline, the report should not exceed 15 to 25 pages, inclusive of tables, figures and figure legends. The emphasis should be on a succinct and clear description of the project rather than on a detailed and lengthy elaboration. It is often more difficult to present only the important aspects of a project than an unlimited compilation of all the experiments that have been done. Part of the student's evaluation is contained in the choice of the material presented, as well as in the ability to give a clear and precise description. It should also be kept in mind that although the number of tables and figures is not specifically restricted, some judgment concerning the length of the figure legends should be exercised. It is obviously defeating the purpose of making a concise presentation to write lengthy text and legends for tables and figures. However, it is essential that the figure and table legends contain sufficient information to enable the Faculty Advisory Committee to interpret and evaluate the data.

### **DESCRIPTION OF ANNUAL RESEARCH APPRAISAL (ARA)**

In order to assist the faculty in assessing the development and progress of each student's research project after advancement to candidacy, an annual appraisal will be made by the student's dissertation committee. This will be known as the Annual Research Appraisal, or ARA. All students will be subject to an ARA in October of each year with some discretion exercised for those whose work is nearing completion (see paragraph on Final ARA). This is the time each year at which the student will be evaluated officially to determine whether the student is making normal and acceptable progress toward the degree. The student must receive a written evaluation from the student's Faculty Dissertation Committee; a copy of will be included in the student's departmental file and the original forwarded to the Graduate Division. The format of the ARA should follow these guidelines:

- A. There should be no more than one page of narrative introduction that should orient the reader in a general way to the research problem. The introduction should indicate the importance of the experiments whose results are reported in part "B" below.
- B. As many tables and figures as are required to succinctly present the results obtained (primarily positive, but negative results are admissible if they prove a

point, or are used to seek help from the committee members). Each figure and table must have a title, a figure legend that will permit the reader to understand the experiment, and a sentence or two explaining the purpose of the experiment. Page numbers should be provided.

- C. No narrative results, discussion, summary, or reference sections are to be included.
- D. Following the figures and tables, a list of major points derived from the experimental results should be given. Each point should consist of no more than one or two sentences. These are topics which the student will address during the oral presentation of the ARA.
- E. The ARA should be provided electronically to each member of the student's committee at least five days before the scheduled meeting. A copy of the ARA is also provided to the Graduate Advisor for the student's departmental file, vial electronic submission to the Student Services Advisor.
- F. The student is responsible for scheduling the meeting, reserving the room, and sending a reminder notice to the committee members that indicates the time and place of the meeting.

The meeting is intended to provide the student with an opportunity to describe and discuss results and problems in some detail with the committee. The meeting would normally be opened by a 20-30 minute presentation in which the student discusses the points listed above under "D".

**Final ARA:** All students should schedule an ARA meeting with their Dissertation Committee approximately three months in advance of the anticipated time of submission of the final draft of the dissertation to this committee. The purpose of this final ARA is to review the material intended for inclusion in the Ph.D. dissertation and ensure that the experimental work is complete.

**SUMMARY OF REQUIREMENTS FOR Ph.D. PROGRAM**

<b>YEAR</b>	<b>FALL</b>	<b>WINTER</b>	<b>SPRING</b>	<b>SUMMER</b>
1				Late Summer: Initial Research Evaluation (IRE) Early Summer: Written Comprehensive Examination
2				Written Comprehensive Examination
3	Oral Exam Research Evaluation Report (RER)			
4	ARA			
5	ARA or Final ARA		Defense of Dissertation Final Seminar	

The BCMB Graduate Program will notify students who fail to complete ARAs and Research Evaluation Reports within the framework of the above-described deadlines that they are not making normal progress. This notice will be incorporated into the student's file and a request will be made to the Graduate Division to block the student's enrollment in subsequent quarters until the deficiency has been removed.

**COMPLETION OF THE DEGREE**

Following completion of the dissertation, the student is required to defend the work therein in a public presentation, followed by a closed questioning period with the Dissertation Committee.

## RECOMMENDED CRITERIA FOR APPOINTMENT OF TEACHING ASSISTANTS

1. All Teaching Assistants must meet minimum requirements set forth by the Graduate Division (3.0 GPA, acceptable progress, appropriate language proficiency, etc.). Exceptions to these requirements will require approval by the Graduate Division.
2. Ph.D. candidates are given preference over M.S. candidates for TA positions.
3. Preference will be given to continuing students in good standing based upon overall academic performance and the rate of progress towards a degree.
4. Satisfactory teaching performance and professional conduct are required for re-appointment. Specific curricular needs may be considered.
5. Appointments are made by the CNAS TA Appointment Committee (TAAC). Students must submit the application on time in order to be considered for an appointment.

## DUTIES OF A TEACHING ASSISTANT

Each graduate student in the Ph.D. Program in Biochemistry and Molecular Biology is expected to serve as a Teaching Assistant for a minimum of two quarters. The following guidelines for Teaching Assistant duties were prepared by the Graduate Division in consultation with the Graduate Student Council. The following is expected of all Teaching Assistants:

1. To attend, to the extent required by the department or supervising faculty, all meetings of the class in which he/she is doing laboratory work, section discussions, grading of papers, or examinations.
2. To consult with the professor in charge of the course as to grading policies, course content, procedures, and proctoring.
3. To attend all meetings of classes, sections, and laboratories for which he/she is personally responsible. Failure to meet regularly scheduled classes for which the TA is responsible constitutes a dereliction of duty and may be grounds for termination of employment. If there is a good reason for absence, the TA must inform the department and arrange for a substitute.
4. To make proper and thorough preparation for each class, laboratory, or section for which he/she is responsible.
5. To assign the amount of written work proper to the lab or section for which he/she is responsible and to read and grade the written work thoroughly and as rapidly as possible.

6. To post office hours at least one hour per week per section, or laboratory, depending on the course, and to hold those office hours without fail.
7. To report grades accurately and on time to the instructor in charge of the course.
8. To give grade books to the instructor in charge at the end of the appointment.
9. To maintain a professional attitude toward all students in his/her classes at all times. The ethical standards of behavior for faculty instruction apply equally to Teaching Assistants.
10. To notify the supervising instructor as soon as the Teaching Assistant anticipates any workload related issues that may result in a violation of the workload article of the ASE/UC contract.

### **UNION REPRESENTATION**

All Teaching Assistants, Associate Ins, Teaching Fellows, as well as Readers and Tutors, are covered under a collective bargaining agreement between the University and CASE/UAW. Students employed in these titles are required to pay either union dues or a fair share fee for union representation. GSRs are not covered by a collective bargaining agreement and do not have to pay these fees/dues.

#### **Sinclair Award in Recognition of Excellence in Teaching**

Eligibility: Graduate students who have served as a teaching assistant for one or more quarters.

Selection: Students are nominated by faculty for whom the student has served as a teaching assistant. Faculty submitting nominations provide a supporting letter of recommendation. Selection is decided by the Chair in consultation with the appropriate faculty.

Award: The winning student(s) receive appropriate recognition such as a certificate and a financial award.

#### **Wedding Award in Recognition of Excellence in Research**

Eligibility: Graduate students in the BCMB Graduate Program. Awards can be repeated for up to three years, but only in competition with others. It is our preference that, in case of multiple awards, that at least one award be made to a student in plant biochemistry.

Applications are made to a selection committee accompanied by a statement (6 pages or less) of qualifications for recognition of biochemical research accomplishments. The committee is appointed by the Chair, and will not include anyone whose student is a finalist. The committee selects a group of final candidates on the basis of the written statement, graduate GPA at UCR, and letters from as many faculty members as the student likes but including their Major Professor.

We wish the committee to note Dr. Wedding's special interest in international students although the Award shall not be limited to this group.

The winning student(s) receive appropriate recognition such as a certificate and an award of at least \$2000.00.

When funds are available, Wedding Travel Awards may be awarded to student applicants to attend a scientific meeting. Students should apply by e-mail directly to the chair of the Biochemistry Department.

#### **COMMENTS ON THE PREPARATION OF THE DISSERTATION (Ph.D.) OR THESIS (M.S.)**

Before initiating the writing process for your dissertation or thesis, you are urged to consult extensively with your Major Professor and your dissertation, or thesis committee. In consultation with them you should determine when your research project has been satisfactorily completed.

The dissertation or thesis writing process is a lengthy one; from 3-6 months may be required. In planning the time required for this process, it is essential that you allow reasonable adequate blocks of time for your committee to read both the draft and the final version of your document. "Reasonable" is understood to be no less than two weeks for each stage; draft and final copy.

The final format of the dissertation and thesis is rigidly specified. You should obtain from the Graduate Division a booklet entitled "Instructions for the Preparation and Submission of Theses and Dissertations." Also it can be very useful to examine copies of dissertations and theses of former students from the Biochemistry Department, but be advised that format requirements have changed recently. Also you must check the format of the final typed copy with the Graduate Division (Enrolled Student Affairs Section), who advises on matters of physical format, but not on the content or style. The Graduate Division also arranges for microfilming of the final dissertation.

Candidates will submit an official electronic copy of the thesis or dissertation to the Graduate Division for deposit with the library. The student should give two hard copies (unbound) to the Student Services Advisor to be bound. One copy will be placed in the Biochemistry Conference Room. The other will be given to the Major Professor. .

## USE OF PREVIOUSLY PUBLISHED MATERIAL AND COPYRIGHT CONSIDERATIONS

### A. Use of your previously published material in the dissertation or thesis:

With the approval of your committee, you must submit to the Dean of the Graduate Division, prior to preparation of your thesis or dissertation, a petition to use material which you have already published or had accepted for publication or have submitted for publication. This petition must explain what articles are to be used and where they have appeared in print. No thesis or dissertation using such published material will be accepted unless the Graduate Dean has given prior written approval. If the published material lists a co-author, and if this co-author is listed by reason of having directed and supervised the research which serves as the basis of your dissertation or thesis, you should list only your own name as the author in the preliminary pages of the dissertation or thesis. However, in your acknowledgment you must state, "The text of this dissertation (or thesis), in part or in full, is a reprint of the material as it appears in [name(s) of the publications]. The co-author(s) listed in that (those) publication(s) directed and supervised the research which forms the basis for this dissertation (or thesis)."

**No thesis or dissertation incorporating reprinted material, which has been copyrighted, will be accepted without appropriate authorization.**

A letter of consent from the publishers is necessary for materials already published or accepted for publication. For materials submitted for publication, you need only send a letter to the publisher stating intent to use the material in your dissertation and file a copy of the letter with the Graduate Division.

It is your responsibility to resolve any copyright problems arising from the use of published material. When you are the copyright owner, you must supply the Graduate Division, prior to or at the point of filing your manuscript, a copyright page giving the following information for each publication:

1. Copy by (name of author-copyright owner).
2. Copyright Registration Number (obtain this number from the copyright certificate).
3. Year copyright was obtained.

When the copyright owner is other than the author, it is necessary for you to submit a written statement from the copyright owner(s) granting permission to use the copyrighted material in your dissertation.

### B. Use of other published material in your dissertation or thesis is **PLAGIARISM**



Students preparing theses or dissertations are reminded that plagiarism is a serious offense. Any written material by another author, either in direct quotations or paraphrased, must be given proper credit in a footnote citation. Direct quotations of 150 words or more from another author's work must not be used without permission in writing from the copyright owner. Additionally, reproductions of photographs, charts, data, drawings, tables, standardized tests, or any other reproductions made directly from any published work (such as newspapers, magazines, professional journals, or books) may not be used without such written prior permission from the copyright owner. Failure to observe these regulations may result in non-acceptance of the thesis or dissertation. Additionally, it is recommended that students protect their own work against plagiarism by copyrighting their dissertation or thesis.

### CHECKLIST FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY Ph.D. PROGRAM

#### YEAR IN PROGRAM

ITEM	1	2	3	4-5	COMMENTS
Initial Research Evaluation	X				Prior to beginning 4th quarter
Written Comprehensive Examination					June of Year 1
Oral Qualifying Examination			X		Fall Quarter, beginning of the 3 <sup>rd</sup> year
ARA		X		XX	To be held in October
Work as a TA		X	X		Minimum of two quarters service
Enrollment in at least 12 units	X	X	X	XX	Each quarter
Enrollment in BCH 240	X	X	X	XX	Each quarter in residence after a lab is chosen
Enrollment in BCH 250		X			Second year
Enrollment in BCH 251		X	X	XX	Once within first 4 years
Enrollment in BCH 252	X	X	X	XX	Every quarter
Enrollment in BCH 297	X	X	X		Prior to advancement to candidacy
Enrollment in BCH 299			X	XX	After advancement to candidacy
Public Defense of Dissertation				X	

## REQUIREMENTS FOR THE MASTER'S DEGREE

### I. Entrance Requirements

- A. The following courses offered at UCR or their equivalents in content are considered to be prerequisites to enter the program:
1. Calculus; Math. 009A-009B-009C
  2. General Physics; Physics 002A-002B-002C
  3. Organic Chemistry; Chem. 12A-12B-12C
  4. Physical Chemistry; Chem. 109 (or Chem. 110A)
  5. Cell & Mol. Biology, Organismal Biology; Biol. 5A-5B
  6. Two courses of upper division Biology plus one course in Genetics
- B. The only prerequisite course that can be fulfilled after admission to the program is CHEM 109 – Physical Chemistry.

### II. Requirements for Plans I and II

#### A. Course Requirements

1. Biochemistry 162; Elementary Biochemistry Laboratory or research equivalent.
2. Biochemistry 110A-110B-110C; General Biochemistry.
3. BCH 184; Topics in Physical Biochemistry.
4. BCH 210, BCH 211, and BCH 212.
5. At least one advanced course taken from the Biochemistry 230 series.
6. Enrollment in General Seminar in Biochemistry 252 each quarter (when offered).
7. No more than 6 units of Biochemistry courses 240, 252, or 261 may be offered in fulfillment of the unit requirement at the 200 level.
8. In special cases, where it is otherwise impossible to obtain the required number of 200-level graded courses, up to 4 units of Biochemistry 290 may be taken for graded credit. Approval of the Graduate Advisor prior to enrollment is required. Also, a petition must be approved by the Graduate Dean.

#### B. Other Requirements

1. A minimum of three quarters in residence.
2. Maintenance of a 3.00 grade point average overall as well as a 3.00 GPA in Biochemistry Department courses while in graduate status.

### III. Special Requirements for Plan I (Thesis Plan)

- A. Completion of 36-quarter units of graduate and upper division courses. At least 24 units of the 36 units must be graduate courses (200-level); of these, a maximum of 12 units may be in graduate research for the thesis (BC 297).
- B. Preparation and presentation (oral examination) of an acceptable thesis.
- C. Approval of admission to Plan I by the Admissions Committee who will use the same criteria applied for admission to the Ph.D. program.
- D. For Plan I (Thesis). The committee will consist of three faculty in the BCMB Graduate Program, officially appointed by the Graduate Division to read the thesis and examine the student in an oral thesis defense.

The Graduate Advisor in consultation with the student determines the composition of the Plan I Committee. The committee should consist of faculty with knowledge of the area of the student's research. No later than three months in advance of submission of the thesis, the student should consult with the Research Advisor so that the committee members can be identified and appointed.

- E. Participation in the annual BCMB Graduate Program Symposium. Each student will be required to make a poster presentation of their research.

### IV. Special Requirements for Plan II - (Comprehensive Examination Plan)

- A. Completion of 36-quarter units of graduate and upper division courses. At least 18 units must be in graduate courses (200-level). In consultation with the Graduate Advisor, the student may find it appropriate to take 200-level courses outside the Biochemistry Department. No more than 6 units of courses graded S/NC may be used to satisfy the unit requirement.
- B. Satisfactory performance on a written (or oral) comprehensive examination.
- C. Masters Plan II students will normally satisfy the Graduate Division requirement for a comprehensive examination by taking the first written examination ***scheduled following the completion of the coursework. An unexcused failure (by either the Graduate Advisor or Department Chair) to sit the examination will be regarded as a failure. No student will be given more than two attempts within one year following completion of the coursework to achieve a satisfactory grade on the comprehensive written examination.*** The subject material for this examination shall include the topics of the following Biochemistry courses: BCH 210, BCH 211, and BCH 212. Satisfactory performance shall be determined by the Examination Committee which is responsible for its administration. Under exceptional circumstances and consultation with the Graduate Advisor, the student may elect to substitute an

oral examination, to be administered by a committee of three BCMB Graduate Program faculty. An appropriate faculty member from another department in the college may substitute for one of the Biochemistry and Molecular Biology faculty with the approval of the Graduate Advisor. It is suggested that the student confer briefly with the members of the Examination Committee during the preparation period.

**CHECKLIST FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY M.S. PROGRAM****Year in Program**

<b>Item</b>	<b>1</b>	<b>2</b>	<b>Comments</b>
Meet with Graduate Advisor	x	x	To be held at least annually prior to the beginning of Fall Quarter
Enrollment in at least 12 units	x	x	Each Quarter
Enrollment in BCH 252	x	x	Each quarter
Enrollment in BCH 297		x	For Thesis Masters only
Written Examination	x	x	In June
Thesis and Thesis Defense	x	x	For Thesis Masters only

## **GENERAL POLICY OF FINANCIAL SUPPORT FOR GRADUATE STUDENTS**

The sources currently available for support include departmental research assistantships and teaching assistantships, grant support to an individual faculty member, or fellowships administered by the Graduate Division or independently obtained by the student. The number to be admitted under each category will be determined annually by the Graduate Program after consultation with the Admissions Committee. Under normal circumstances, students in a M.S. program (either Plan I or Plan II) should not expect to receive financial support from the department.

Students can anticipate financial support in their second and later years from:

1. Grant support of their Major Professor
2. Teaching Assistant positions

Students normally will not receive financial support from departmental or grant resources for more than 5 years. Extension beyond this time must be justified by the student to their Faculty Advisor.

## **GENERAL POLICY ON CORRECTIVE ACTIONS DUE TO FAILURE TO MEET PROGRAM REQUIREMENTS**

In those instances where a student's research performance and/or actions result in a loss of good standing in the program, it is departmental policy that the student be given a written warning. To the extent possible, this warning will spell out the deficiencies which are responsible for the loss of good standing, describe the conditions which must be met in order to regain good standing in the program, and define the actions to be taken by the faculty advisor, department and/or the Graduate Division if the student is unable to correct the deficiency.

When appropriate, the department and/or faculty advisor will negotiate an agreement with the student to define the conditions that must be met to regain good standing and the time limits for their completion. This procedure is particularly important when the deficiency in question concerns the student's research performance. Corrective actions available to the department range from disciplinary actions of a temporary nature to actions involving restricted use of departmental facilities and resources, to termination of financial support and dismissal from the faculty advisor's laboratory or the BCMB Graduate Program.

This policy statement does not apply to the Oral Qualifying Examination or to the examinations involving thesis or dissertation defense. Please refer to the Graduate Division for the details of the policies, which apply to these examinations.

## Biochemistry and Molecular Biology Graduate Program Academic Appeals Procedures

1. **Purpose and Scope:** The procedures described here enable current and former graduate students to appeal academic decisions including outcomes of comprehensive and qualifying examinations. Applicants denied admission to a program may not use this procedure and instead will be referred to the admissions office of the Graduate Division. The procedure described here excludes complaints regarding grades, academic integrity and discipline, employment, benefits, and auxiliary student services (such as housing and child care). In some circumstances, this procedure may be used to address complaints regarding violations of campus non-discrimination policies, to the extent that a documented discriminatory act has affected a student's academic progress (for details, see [http://graduate.ucr.edu/dispute\\_resolution.html](http://graduate.ucr.edu/dispute_resolution.html)).
  - a. Grade disputes must be appealed under the Academic Senate Bylaw R5, Procedures for the Appeal of Grades ([http://senate.ucr.edu/bylaws/?action=read\\_bylaws&code=r&section=05](http://senate.ucr.edu/bylaws/?action=read_bylaws&code=r&section=05)).
  - b. For academic integrity disputes involving graduate students, see the Academic Senate Bylaw 6 ([http://senate.ucr.edu/bylaws/?action=read\\_bylaws&code=app&section=06](http://senate.ucr.edu/bylaws/?action=read_bylaws&code=app&section=06)).
  - c. For disputes involving graduate student academic employment, see the Employment Issues section of [http://graduate.ucr.edu/dispute\\_resolution.html](http://graduate.ucr.edu/dispute_resolution.html)
  - d. For other non-academic issues, the student may be referred to the campus Ombuds (<http://ombudsperson.ucr.edu/>) and/or the Office of Administrative Resolution (<http://conflictrresolution.ucr.edu/>).
2. **Access to Academic Records:** Pursuant to FERPA requirements, students are entitled to immediate access to academic records stored in his or her academic file. Students also are entitled to a review of faculty evaluations of their work, such as faculty comments on qualifying examinations, and to have those actions explained to them by the relevant faculty.
3. **Informal and Formal Resolution:** As a first step in an appeals procedure, students are strongly encouraged to pursue informal resolution of disputes over academic decisions before resorting to a formal appeal. Informal resolution involves further oral communication among the affected parties (e.g., a student and the chair of his/her examination committee), in the presence of a third party if so desired. Absent an informal resolution, a formal complaint must be initiated in writing.
4. **Formal Appeal Initiation:** The formal appeals procedure defines what constitutes a valid appeal:
  - a. Only current and former graduate students and faculty members in the program may use this procedure.
  - b. The formal appeal must be addressed in writing to the Graduate Adviser. If the student perceives a conflict of interest with the Graduate Advisor, the



appeal may be addressed instead to the Department Chair. The appeal must be addressed to one or the other of these program officers.

- c. The appeal must include a written statement that lays out the grounds for the appeal, and any supporting documentation.
- d. The appeal must be initiated within 30 calendar days from the day the student knew or reasonably should have known about the action generating the complaint, excluding campus holidays, intersession periods, and summer session.
- e. The valid grounds on which a student may base an appeal are confined to three areas: (1) evidence of procedural error and/or (2) evidence of non-academic criteria being used to evaluate academic work, including personal bias and violations of the campus nondiscrimination policy and/or (3) special mitigating circumstances beyond the student's control not properly taken into account in a decision affecting the student's academic progress.

**5. Investigation and Record Keeping:**

- a. The validity of an appeal (under Section 4) will be ascertained by the Graduate Advisor (or Department Chair, if the addressee of the formal appeal) and if deemed valid will be referred to an *ad hoc* hearing panel consisting of three faculty in the graduate program, selected by the Graduate Advisor (or Department Chair) and taking into account possible conflicts of interest. Only faculty who were not involved in making the decision under appeal may sit on the *ad hoc* hearing panel.
- b. The *ad hoc* hearing panel will confirm the validity of the appeal (under Section 4).
- c. If the appeal is found valid, the *ad hoc* hearing panel will review the written complaint and submitted materials; afford the opportunity for the affected parties to meet separately with the hearing panel; and undertake any appropriate interviews of third parties to obtain information relevant to the decision(s) in question. The *ad hoc* hearing panel will then make a decision regarding the merits of the appeal as well as any remedy it considers appropriate.
- d. The *ad hoc* hearing panel may not change an exam result, although it may judge a result to be invalid.
- e. The *ad hoc* hearing panel will make a decision and notify the appellant of the outcome within 60 days of the initiation of the formal complaint.
- f. A written summary of the investigation and the conclusion reached pursuant to the investigation will be prepared by the *ad hoc* hearing panel and kept in the student's academic file. If the appeal is supported, prompt corrective action will be taken.

- 6. Notice to Parties:** The complainant and any parties complained of will be promptly informed in writing of the outcome of the investigation and any corrective action taken.

7. **Appeal Procedure:** All affected parties have the opportunity to appeal academic decisions made at the program level (including appeals decisions) to the Graduate Dean. ([http://graduate.ucr.edu/dispute\\_resolution.html](http://graduate.ucr.edu/dispute_resolution.html)).
8. **Timeframes:** All timeframes are defined in terms of calendar days, excluding campus holidays, inter-session, and summer session, starting on the day the student either knew or reasonably should have known of the actions leading to the complaint.

### **GENERAL INFORMATION FOR GRADUATE STUDENTS**

The following information regarding the operation of the BCMB Graduate program, particularly in relation to graduate students, is provided primarily for the information of new students, but may also serve as a reminder for continuing students.

#### **Mail:**

Graduate student mailboxes are located in Room 1447 Boyce Hall. Personal mail such as bank statements, magazines, etc. must not be received at the departmental address.

#### **Desk Space:**

Desk space for doctoral students is provided in the laboratories of their research directors. Master's students are not assigned a desk.

#### **Biochemistry Department Library:**

The Biochemistry Department maintains a small library including some serials and some monograph volumes related to the interests of the Biochemistry and Molecular Biology students. This collection is located in Room 2476 Boyce Hall. Students are not permitted to check volumes out of the departmental library and should not remove any items from Room 2476.

#### **Student Health Insurance Program:**

All fully enrolled students are eligible for outpatient services, including counseling, through the Campus Health Service, Veitch Center. For a complete description of coverage, costs of premiums, and more specific information, contact the Campus Health Service, Veitch Center, or call (951) 827-3031.