

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

**REQUIREMENTS FOR THE Ph.D. DEGREE IN BIOCHEMISTRY AND MOLECULAR
BIOLOGY**

Each student in the Ph.D. program will be assigned a Faculty Advisory Committee. This committee consists of three Graduate Program in Biochemistry and Molecular Biology faculty members and will be chaired by the student's research director. The responsibilities of this committee include advising the student about academic matters including course selection, and oversight of the student's progress in research. Students in the M.S. program are advised by the Graduate Advisor.

I. Entrance Requirements (Other than Biochemistry)

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

- | | |
|--|---------|
| 1. Calculus; Math. 009A-009B-009C | (4-4-4) |
| 2. General Physics; Physics 002A-002B-002C | (4-4-4) |
| 3. Organic Chemistry; Chem. 112A-112B-112C | (4-4-4) |
| 4. Physical Chemistry; Chem. 109 (or Chem. 110A) | (4) |
| 5. Cell & Mol. Biology, Organismal Biology; Biol. 5A-5B | (4-4) |
| 6. Two courses of upper division Biology plus one course in Genetics | (4-4-4) |

B. If these courses are not taken prior to entrance to the program, they are considered as deficiencies and should be made up as soon as possible. The Graduate Advisor will determine which of the above courses (deficiencies) must be taken by students in the M.S. and Ph.D. programs.

II. Biochemistry Course Requirements

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

- A. Biochemistry 110A-110B-110C; General Biochemistry.
- B. Biochemistry 102; or the equivalent research experience.
- C. Biochemistry 184; Topics in Physical Biochemistry.
- D. Biochemistry 210; Biochemistry of Macromolecules and Biochemistry 264; Seminar-Tutorial in Physical Biochemistry.

- E. Biochemistry 211; Molecular Biology and Biochemistry 212; Signal Transduction.
- F. At least one advanced course taken from the Biochemistry 230 series.
- G. Elective Course Requirements. The following guidelines should be used in planning a course program of electives in subsidiary fields of study for the Ph.D. program in Biochemistry and Molecular Biology. The elective courses must consist of at least 9 units of graduate science or upper division undergraduate course work. Electives must be chosen in consultation with the student's Faculty Advisory Committee. **No courses taken while an undergraduate can be offered to satisfy this requirement.** Courses taken to satisfy deficiencies at the time of admissions cannot be counted toward the elective course requirement. The responsibility for ensuring the relevance of the electives is delegated to the Faculty Advisory Committee. A copy of the proposed electives must be filed with the Graduate Advisor together with a brief statement explaining the rationale for the electives selected.
- H. Registration for the General Seminar in Biochemistry (BCH 252) when offered. Ph.D. students are required to take Oral Presentations in Biochemistry (BCH 250) prior to Advancement to Candidacy, and to make one oral presentation in his/her first four years (BCH 251) concomitant with enrollment with BCH 252. A final seminar is required upon completion of the thesis research.
- I. Attendance in Special Topics in Biochemistry (BCH 240) each quarter in residence (except the first quarter). If a student's major professor is unable to hold BCH 240, the student should enroll in another BCH 240 related to their research interests.

III. Other Requirements

- A. Successful completion of the Initial Progress Evaluation, normally after the third quarter after matriculation, and the Initial Research Evaluation prior to the beginning of the fourth quarter.
- B. Successful performance in the Written Comprehensive Examination administered in July of the 2nd 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.) This constitutes the Oral Qualifying Examination for Advancement to Candidacy. After successful completion of Sections I, II and Steps A, B, and C of Section III, the student is advanced to candidacy.
- D. Service by each student as a teaching assistant for at least two quarters; the Graduate Division requires that TA's must have a GPA \geq 3.25. Students whose

native language is not English must pass the TAST test (administered by the Learning Center) 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 graduate status (note 3.25 requirement in D).
- G. Submission and defense of an acceptable dissertation.
- H. Following completion of the dissertation, the student is required to defend the work therein in a meeting with his/her Dissertation Committee. A final seminar presented to the department and the public also is required. The official documents, which certify that all degree requirements have been met, will not be signed until the final seminar has been given. However, the seminar can be given as early as the quarter prior to the completion of the dissertation.

251 SEMINAR REQUIREMENTS

1. At least one seminar is to be presented during a Ph.D. student's graduate career. The Faculty Advisory Committee may request additional seminars if it is thought that this will benefit the student. Students are required to complete Oral Presentations in Biochemistry (BCH 250), normally taken in fall quarter of the second year, prior to giving their seminar. The seminar will be presented as part of the General Seminar in Biochemistry (BCH 252) series; the student will enroll in both BCH 251 and BCH 252 the quarter of the presentation.
2. The schedule of speakers and topics should be available one month prior to the beginning of each quarter.
3. 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 each seminar will be critiqued by two graduate students and the seminar coordinator. In addition to these two, each first-year student should critique one seminar during the first year.
4. All students should seek advice from the seminar coordinator about the details and topic for the presentation.
5. The General Seminar in Biochemistry (BCH 252) series will meet on Tuesdays at 4:10 p.m.

SELECTION OF A RESEARCH ADVISOR

It is the faculty's intention that selection of a Faculty Research Advisor occur at the end of the student's second quarter in residence in the Ph.D. program and the student begin research at the beginning of the third quarter in residence. It is our policy to provide the student with as many choices as possible within the limitations imposed by resources, the availability of laboratory space, and the distribution of faculty workloads. Students entering the Biochemistry and Molecular Biology Graduate Program will meet with faculty having an opening in his/her 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. The details of this process will be fully explained by the Graduate Advisor to each new student entering the Ph.D. program. After careful review of the student's choices, departmental resources, laboratory space, and faculty workloads, the entire faculty will make the final decision on assignment to a laboratory.

In a few cases, students may enter the program precommitted to a research advisor and will then begin research immediately.

Following assignment 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 a three-member Advisory Committee. After advancement to candidacy, a three-member Dissertation Committee is formed which may consist of the same or different faculty. One member of the Advisory and Dissertation Committee may be outside of the Graduate Program with an appointment in another department on campus.

A GENERAL POLICY FOR GRADUATE STUDENTS WISHING TO CHANGE RESEARCH ADVISORS

Following assignment of first-year graduate students to faculty advisors, the students are expected to remain under that faculty member's guidance until the completion of their research toward the Ph.D. degree. If a situation arises where either a student or the faculty advisor decides that the student should leave that laboratory, the Graduate Advisor should be informed immediately. If, following discussions with the faculty member, the student, and the student's Faculty Advisory Committee, the Graduate Advisor decides it is in the best interests of all concerned for the student to change laboratories, the Graduate Advisor will advise the rest of the faculty that the student is seeking another research mentor. The student will meet with the faculty with openings and submit a list of possible laboratories in the order of preference to the Graduate Advisor. The final decision on assignment to a laboratory rests with the entire faculty.

CHECK LIST

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 committee must submit to the Graduate Advisor a letter evaluating the student's progress in the Ph.D. program. Copies of this letter will be sent to the student and to the Graduate Division.

Please note the following:

All full-time students should be enrolled in at least 12 units. These units should 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 (1-4 units).
- ✓ Each Ph.D. student must enroll in 2 units of BCH 240 (Journal Club) each quarter in residence.
- ✓ Each Ph.D. student must enroll in BCH 252 each quarter (when offered). If there is a course conflict the student must inform the Graduate Advisor in writing, so a special dispensation can be obtained from the Graduate Division.
- ✓ BCH 261, the interdepartmental Visiting Speaker Seminar Series in Molecular Biology is optional.

THE INITIAL PROGRESS EVALUATION

All students in the Ph.D. program will undergo an evaluation by the faculty, normally at the end of the first three quarters in residence. The basis of the evaluation will be the academic performance of the student as judged by an overall GPA of at least 3.0, comments from course instructors, and a preliminary assessment of the potential of the student for success in research provided by the major professor.

When the final grades are available after the third academic quarter, the Graduate Advisor shall compile a report for the faculty, which shall include the following:

1. A listing of GPA's and letters of evaluation from instructors in Biochemistry courses, and
2. A letter from the student's major professor commenting on the student's potential for success in research. This letter should comment specifically upon the student's diligence, productivity, and creativity in the conduct of his/her research.

Based on these documents, the Graduate Advisor will make a recommendation to the Biochemistry and Molecular Biology Graduate Program faculty in a regularly scheduled faculty meeting as to whether the student is making normal progress at the end of the third quarter in residence. The student will be informed in writing of the results of this evaluation by the faculty.

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 dissertation 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.

Both the Initial Progress Evaluation and the Initial Research Evaluation must be completed successfully in order for the student to begin the fourth quarter of the program.

University Of California at Riverside
Graduate Program in Biochemistry and Molecular Biology

IRE SCHEDULING ACKNOWLEDGMENT FORM

The Initial Research Evaluation will take place prior to the beginning of the fourth quarter.

STUDENT'S NAME

IRE is scheduled for:

Date _____ Time _____

Approved

Research Director _____

Research Advisory Committee Member _____

Research Advisory Committee Member _____

THE WRITTEN COMPREHENSIVE EXAMINATION

A written comprehensive examination will be held in July of the student's second year in the program. A committee of faculty appointed by the Chair will compile the examination from questions submitted by the entire faculty. The examination will be held in the morning and afternoon of one day. All students will have the same questions and will take the examination at the same time. At the undergraduate level, questions will cover biochemistry taught in BCH 102, BCH 110ABC, and BCH 184, and at the graduate level, material presented in BCH 210, BCH 264, BCH 211, and BCH 212.

Students may submit a petition to the Exam Committee to take the Written Comprehensive Exam at the end of the first year.

After the faculty members have graded all the examinations, the faculty, as a whole will be responsible for the determination of what constitutes passing. Both grading and the determination of the passing level will be done "blind," i.e., with the exams coded by number and not identified by name.

If a student should fail the written examination he/she may re-take the exam once, normally 3-6 months following the initial exam. If more than one student fails the written comprehensive examination, the re-examination will be coordinated so that all can take the examination at the same time. The Examination Committee will be responsible for compiling the second examination and the grading and evaluation process will be the same as before.

THE ORAL QUALIFYING EXAMINATION

After passing the Written Comprehensive Examination the student will take, prior to the end of the Fall Quarter of the third year, 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 on pages 10-11. This document will be provided to the committee one week prior to the Oral Examination.

The Oral Qualifying Examination Committee will normally be comprised of four faculty members of the Biochemistry and Molecular Biology Graduate Program (the three members of the student's Advisory Committee, plus one other who will serve as Chair), and one faculty member from outside of the graduate program. 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, and questioning should include the student's subsidiary field (see section II G). The goal of this examination is to assess:

1. The ability of the student to write the Research Evaluation Report clearly and concisely.
2. The ability of the student to carry out intelligent and productive research.

3. The sophistication of the student with regard to the conceptual framework of the scientific literature pertaining to his/her area of research.
4. The ability of the student to 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.
5. The student's competence in the subsidiary field of study.

The Oral Qualifying Committee is an official committee of the UCR Graduate Division. The Graduate Division appoints members of the committee after being nominated by the Graduate Advisor or the Departmental Chair. The results of the Oral Examination are reported directly to the Graduate Division on official forms and the results are then entered into the student's official record. The Graduate Division requires that nominations for the Qualifying Examination Committee be received at least 2 weeks, preferably one month, and prior to the date of the examination. The student should discuss the composition of his/her committee with the Graduate Advisor who will then send the appropriate nomination forms 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 exam.
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

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 then pass a series of written and oral qualifying examinations. Results of the written and oral examinations must be reported to the Graduate Dean after each attempt (on Ph.D. Form 3). After successful completion of the qualifying examinations and completion of all university and graduate program requirements, the student is eligible for formal advancement to candidacy. The department or graduate group will be sent the "Report of Departmental Requirements for Ph.D. Degree." In order for students to be formally advanced to candidacy, this must be returned to the Graduate Division. The student will be billed the Candidacy Fee after the degree check has been completed. The student and graduate group will be notified of the formal advancement to candidacy. The Candidacy Fee is later used to pay for microfilming the student's dissertation.

Reduced Nonresident Tuition Waiver for Ph.D. Students Advanced to Candidacy: All students who are considered nonresidents for tuition purposes and are advanced to candidacy for the Ph.D. as of the first day of the fall quarter will receive a reduction of 75% of the nonresident tuition. Each student is eligible for this reduced nonresident tuition for a maximum of three calendar years. Time spent not registered (withdrawn, on leave, or on filing fee status) will count toward the three-year total unless the Graduate Dean grants an exception. A student must be advanced by the first day of the academic term to qualify for that term.

DESCRIPTION OF THE RESEARCH EVALUATION REPORT

All students in the Biochemistry and Molecular Biology Ph.D. Program are required to prepare and orally defend a research report, normally no later than the fall quarter of their third year. It shall be prepared according to the following specifications:

1. A general introductory section concisely summarizing previous work in the field and leading into a more specific discussion of the literature directly pertinent to the project.
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 results already obtained.
6. 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). The report might reasonably be expected to cover 15-25 typewritten pages (double spaced) in addition to graphs, tables, figure legends, etc. All pages must be numbered.
7. The student is expected to prepare six copies of the report; one copy to be personally presented to each member of the student's committee and to the graduate assistant (file copy for the department) **AT LEAST ONE WEEK BEFORE THE EXAMINATION DATE.**

8. 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 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 on three aspects: (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 plus 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 in the text to write lengthy legends for each table and figure. However, it is essential that the figure 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; copies of the evaluation will be included in the student's departmental file and 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).
- B. As many tables and figures as are required to succinctly present 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 typed and personally handed out to each member of the student's committee at least five days before the scheduled meeting. A copy of the ARA should be provided to the Graduate Advisor for the student's departmental file.
- F. The student should arrange the schedule and reserve a room for the meeting and send a reminder notice to the committee members, indicating 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 and go over 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

YEAR	FALL	WINTER	SPRING	SUMMER
1			Initial Progress Evaluation (IPE)	Late Summer: Initial Research Evaluation (IRE)
2				July: Written Comprehensive Examination
3	Oral Exam Research Evaluation Report (RER)			
4	ARA			
5	ARA or Final ARA		Defense of Dissertation; Final Seminar	

The Biochemistry and Molecular Biology Graduate Program will notify students who fail to complete ARA's 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 meeting with his/her Dissertation Committee. A final seminar presented to the department and the public is also required. The official documents, which certify that all degree requirements have been met, will not be signed until the final seminar has been given. However, the final seminar can be given as early as the quarter prior to the completion of the dissertation.

ARA/ORAL EXAM SCHEDULING ACKNOWLEDGMENT FORM

Students should schedule a definite date for these meetings prior to the beginning of the fall quarter. Failure to comply will result in a request to the Graduate Division to block the student's enrollment in subsequent quarters until the deficiency has been removed. If, after two quarters, the ARA or ORAL EXAM in question has not been held, the student will be subject to dismissal from the Ph.D. program.

STUDENT'S NAME

ARA/ORAL EXAM is scheduled for:

DATE

TIME

Approved: _____

Chair, Orals Committee (Graduate Program faculty member)

Faculty Advisory Committee Member

Faculty Advisory Committee Member

Faculty Advisory Committee Member

Faculty Member **outside** the Graduate Program

A partial exception to this policy may occur in the last year of a student's participation in the program, i.e., the final ARA may be scheduled in consultation with the Faculty Advisory Committee at a logical time in relation to the completion process.

RECOMMENDED CRITERIA FOR APPOINTMENT OF TEACHING ASSISTANTS

1. All Teaching Assistants must meet minimum requirements set forth by the Graduate Division (3.25 GPA, acceptable progress, appropriate language proficiency, etc.). Exceptions to these requirements will require approval of the TA appointment by the Graduate Division.
2. Ph.D. candidates will generally be given preference over M.S. candidates.
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. The Graduate Advisor in consultation with the Department Chair will make appointments and re-evaluate appointments. The Department Chair will resolve disputed cases.
6. Periods of appointment may be made by the department for one, two, or three quarters (or for summer session if applicable) and may be renewed according to the criteria and/or guidelines set forth above.

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 exams.
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.

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

Before actually 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 take two official copies of the thesis or dissertation to the Graduate Division for deposit with the library. One copy of the final version of the thesis or dissertation is required to be given to the Graduate Advisor for the department. It is customary for the departing student to provide each member of his thesis or dissertation committee with a bound copy of his thesis or dissertation.

One expense that many students are unaware of (or which is grossly underestimated) is the cost required for preparing and duplicating the draft(s) and final copies, and preparation of figures and possibly photographs. These expenses, which in recent years have run as high as \$1,000, are incurred by the student, i.e., not by the Biochemistry Department or grants of the student's major professor.

Another item often underestimated both with regard to the time and expense required is the preparation of illustrations for the dissertation or thesis. If your thesis dissertation contains figures or photographs, these will need to be reproduced for all copies of the thesis. These should be of good quality comparable to that required by professional journals, e.g., *Journal of Biological Chemistry*, *Biochemistry*, *Archives of Biophysics and Biochemistry*, etc. A student can often do a substantial amount of advance work by not leaving the preparation of figures to the last stage. Rather, it may be possible to prepare them in final form after the Dissertation Committee has approved them.

POLICY STATEMENT CONCERNING FORMAT AND CONTENT OF Ph.D. DISSERTATION

Since the inception of the Graduate Program in Biochemistry and Molecular Biology, students have been required to submit a written dissertation following the conventional format. In view of revised rules by the Graduate Division (which permit the use of published materials in the dissertation), the Biochemistry Department voted to modify its dissertation policy to accommodate this change.

The policy states that the format and the content of the dissertation are subject to the discretion of the Dissertation Committee. In practice, the policy means that following consultation with the student, the Dissertation Committee may elect to approve submission of:

1. A written dissertation following the conventional format, **or**
2. A dissertation, which includes published materials.

If the student proposes to incorporate previously published, in press, or submitted manuscripts as a part of his/her dissertation, he/she should be prepared to convince his Dissertation Committee that he/she was the major contributor to the experimental work and writing of the publication. Moreover, the published paper(s) should be preceded by the conventional literature survey and followed by an overall discussion of the results and conclusions. In addition, the student must observe the regulations set forth in the Graduate Division booklet entitled, "Instructions for the Preparation and Submission of Theses and Dissertations." Item III is reproduced below for your information.

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 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 - **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 Progress Evaluation	X				At the end of 3rd quarter
Initial Research Evaluation	X				Prior to beginning 4th quarter
Written Comprehensive Examination		X			July of Second Year
Faculty Advisory Committee Meeting	X	X	X		To be held at least annually in September
Oral Qualifying Examination			X		Fall Quarter, beginning of the 3 rd year
ARA				XX	To be held in October
Service as a TA		X	X		Minimum of two quarters' service
Enrollment in 12-14 units	X	X	X	XX	Each quarter
Enrollment in BCH 240	X	X	X	XX	Each quarter in residence
Enrollment in BCH 250		X			Fall quarter
Enrollment in BCH 251		X	X	XX	Once, within first 4 years
Enrollment in BCH 252	X	X	X	X	When offered
Enrollment in BCH 297	X	X	X		Prior to advancement to candidacy
Enrollment in BCH 299			X	XX	After advancement to candidacy
Defense of Ph.D. Dissertation				X	
Presentation of Dissertation Seminar				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 (4-4-4)
 2. General Physics; Physics 002A-002B-002C (4-4-4)
 3. Organic Chemistry; Chem. 112A-112B-112C (4-4-4)
 4. Physical Chemistry; Chem. 109 (or Chem. 110A) (4)
 5. Cell & Mol. Biology, Organismal Biology; Biol. 5A-5B (4-4)
 6. Two courses of upper division Biology plus one course in Genetics (4-4-4)
- B. If these courses are not taken prior to entrance to the program, they are considered as deficiencies and should be made up as soon as possible.

II. Requirements for Plans I and II

A. Course Requirements

1. Biochemistry 102; Elementary Biochemistry Laboratory or research equivalent.
2. Biochemistry 110A-110B-110C; General Biochemistry.
3. BCH 184; Topics in Physical Biochemistry.
4. Either both BCH 210 and BCH 264 or both 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.

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 the three faculties in the Biochemistry and Molecular Biology 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 Graduate Advisor so that the committee members can be identified and appointed.

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 a written exam which will be offered at least twice annually, in early May/June and in July of each academic year. The subject material for this exam shall include the topics of the following Biochemistry courses: BCH 102, 110A, 110B, 110C, 184, and a limited number of questions from either BCH 210/264 or BCH 211/212 (the choice of the BCH 210/264 or BCH 211/212 is to be specified by the student). 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 Biochemistry and Molecular Biology 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**

Item	1	2	Comments
Meet with Graduate Advisor	x	x	To be held at least annually prior to the beginning of Fall quarter
Enrollment in 12-14 units	x	x	Each Quarter
Enrollment in BCH 252	x	x	Each Quarter, when offered
Enrollment in BCH 297		x	For Thesis Masters
Written (Oral) Examination	x	x	In June/July
Thesis and Thesis Defense	x	x	For Thesis Masters

GENERAL POLICY OF FINANCIAL SUPPORT FOR GRADUATE STUDENTS

Students may be admitted to the Ph.D. program with or without financial support. 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.

The evaluation process for all first-year students will be used by the faculty to determine which students receive funds administered by the Biochemistry Department. Students who do not pass the evaluations must be terminated from the Ph.D. program. Students who have the highest evaluations will have priority in receiving departmental financial support for their second year (if funds are not available from their research advisor); such students will also have priority over new applicants for financial support for the second year. Students who do not fall in either category may continue in the program without financial support. Students can anticipate financial support in their third and later years from:

1. Grant support of their major professor; or
2. The department, subject to review of the faculty.

Students normally should 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 his/her Dissertation Committee.

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 corrective actions to be taken by the department and/or the Graduate Division if the student is unable to correct the deficiency.

When appropriate, the department 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 program.

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

GENERAL INFORMATION FOR GRADUATE STUDENTS

The following information regarding the operation of the Biochemistry and Molecular Biology 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 1303 Webber Hall and the mail is usually distributed by 10:00 in the morning and 3:00 in the afternoon. Personal mail such as bank statements, magazines, record club deliveries, etc. must not be received at the departmental address. Personal mail, even with proper postage, must not be placed into the departmental mailbag; the campus Mail Room will not process it.

Desk Space:

Desk space for graduate students is provided in the laboratories of their research directors.

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 2466. Students are not permitted to check volumes out of the departmental library and should not remove any items from Room 2466.

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.