IQB Graduate Student Handbook

University of California, Santa Barbara

2025-26

***Revised February 2026**

Special Note

The program name was officially changed in July 2024 from Biomolecular Science & Engineering (BMSE) to Interdisciplinary Quantitative Biosciences Program (IQB). The degree name offered by this program remains a Ph.D. in Biochemistry & Molecular Biology with an optional emphasis in Biophysics & Bioengineering.

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1- Graduate Programs in IQB

1.1 Program Administration and Faculty

Business Officer – The IQB Program Business Officer, Sophie Streichan (location: Ellison Hall, room 2703; phone: 893-2290; email: sophiestreichan@lifesci.ucsb.edu) serves as the Program Manager and Administrative Assistant to the Director. The Program Business Officer provides general administrative support to the Program and Director, including topics related to faculty and graduate student affairs, program policies and procedures, accounting & financial support, and event coordination.

Staff Graduate Advisor – The Graduate Program Advisor (location: Ellison Hall, room 2705; email: jserena@ucsb.edu) serves as the IQB Staff Graduate Advisor. The Staff Graduate Advisor provides general graduate student support for the program:

1. Providing information on admission, registration, examinations, petitions, academic policies, and procedures
2. Maintaining student files
3. Providing liaison with the Graduate Division and the Registrar.

Program Director – Professor Cristina Marchetti serves as Director of the IQB graduate program.

Faculty Graduate Advisor – The Faculty Graduate Advisor represents both the IQB faculty and the Graduate Division, and oversees the implementation of graduate program policies. The Faculty Advisor approves enrollment plans and petitions (leaves of absence, etc.) and helps track the academic progress of students.

Steering Committee – The Steering Committee is charged with providing advice to the Director on the development of Program's policies and procedures, the formulation of long-range plans, and the acquisition and distribution of University resources as required for the development and maintenance of the program. The Steering Committee also provides advice on behalf of the program faculty in negotiations with the affiliated departments and with the campus administration. The Steering Committee is composed of program faculty appointed by the Director. The composition of the Steering Committee will reflect the breadth of program membership in the areas of molecular biology, biochemistry, biophysics, and bioengineering.

1.2 Program Mission and Degrees

The Interdisciplinary Quantitative Biosciences Program Ph.D. Program is offered cooperatively by faculty in the following departments: Molecular, Cellular, & Developmental Biology (MCDB), Ecology, Evolution, & Marine Biology (EEMB), Chemistry & Biochemistry (DCB), and Physics in the College of Letters & Science, and Materials, Chemical Engineering, Mechanical Engineering, and Computer Science departments in the College of Engineering. The policies, procedures and requirements pertaining to the program are outlined in this guide.

2- General Program Requirements

2.1 English Language Requirement

All Ph.D. students are expected to demonstrate proficiency with English in all written and oral examinations. The Interdisciplinary Quantitative Biosciences Program Ph.D. program has no foreign language requirement.

Students whose native language is not English are required, as a matter of university policy, to complete a placement examination and courses in the "English as a Second Language" (ESL) program until they earn an exemption from further ESL course attendance. Special proficiency in English must be documented, by appropriate test, before students with a native language other than English may be assigned teaching assistantships. The Staff Graduate Advisor should be contacted for further details.

2.2 Curricular Requirements

Undergraduate Preparation – The program welcomes students with a variety of undergraduate training, including in biology, physics, chemistry, biochemistry, computer science, and mathematics, among others. Gaps in academic preparation will be identified on entrance, in consultation with the Faculty Graduate Advisor. Remedial courses may be taken at the undergraduate level, but will not earn credit toward any unit requirement for a graduate degree.

2.3 Quarterly Registration and Enrollment

Registration – It is the student's responsibility to complete class registration for each quarter in a timely manner via GOLD (late registration incurs a $50 late fee). Students who have identified a research mentor are expected to consult with their mentor prior to registration. All students are required to consult annually with their committee and submit the Annual Update Form to

the Staff Graduate Advisor regarding their progress toward meeting program requirements. For information on registration and enrollment procedures, visit Registrar's website.

3- Doctoral Program: Academics and Timeline

All students are enrolled in one of two emphases: Biochemistry and Molecular Biology (BCMB) or Biophysics and Bioengineering (BIOPHENG). All students are expected to take the Interdisciplinary Quantitative Biosciences at the Bench (iQB²) in their first quarter (register for both IQB 210 and IQB 224), lab rotations, and a number of core and elective courses, as described below. Students typically join a research group in the Summer of their first year and complete their Doctoral degree within 5-6 years. An important step required of all students is the Advancement to Candidacy Exam that must be taken by the end of the third year of graduate studies.

3.1 Program Course Requirements

- 15 total units of core courses (see Appendix B and C for a list); 10 units in primary emphasis (BCMB or BIOPHENG) & 5 units in other emphasis categories. Grade of B or better for all core courses.
- Lab rotations
- Seminar courses:
    - MCDB 260 (2 units every QTR until advancement, except Fall QRT first year, 6 units minimum needed to advance)
    - Friday Noon Seminars (IQB 262; 1 unit every QTR till degree completion, 15 units needed before degree can be awarded)
- Research units
- TA Requirement (2 quarters to be completed by end of program)
- Submission of Annual Update Form every year by deadline after first year

3.2 Other Requirements

- Decide on a dissertation advisor/laboratory by end of Spring Quarter
- Non-CA residents are expected to CHANGE THEIR RESIDENCY STATUS to CA before classes start in Fall quarter—this needs to be submitted ASAP upon arrival in California Please see the Office of the Register website for information.

3.3 Timeline For Degree Completion

Year One

- Fall Quarter:
    - iQB2 course: register for both IQB 210 (4 units) & IQB 224 (4 units). Grade of B or better.
    - IQB 262 Research Progress in IQB (FNS)
    - MCDB 500 Teaching Assistant Orientation
    - MCDB 502 Teaching Assistant Training

- Winter Quarter:
    - IQB recommended core lecture courses: IQB 229 (2 units)
    - Lab Rotations (register for IQB 592)
    - IQB 262 Research Progress in IQB (FNS
    - MCDB 260 Research Strategies in MCDB
    - MCDB 501 TAShip

- Spring Quarter
    - IQB recommended core lecture courses: IQB 247 (3 units)
    - Elective courses towards core unit requirements (see Appendix … for a list of approved courses*)
    - Lab Rotations (register for IQB 592)
    - IQB 262 Research Progress in IQB (FNS)
    - MCDB 260 Research Strategies in MCDB

*If you wish to take a course that is not in the approved list please contact the Faculty Graduate Advisor.

Year Two

- Fall Quarter: form Dissertation Committee and submit Committee Selection form to Faculty Graduate Advisor
- Finish any required coursework
- Every quarter: IQB 262 (FNS) (1 unit)
- Every quarter: MCDB 260 (2 unit)
- Every quarter as needed: IQB 595 or 596 research units with Advisor
- By June 30th: submit Annual Update Form

Year Three

- Finish any required coursework
- Every quarter: IQB 262 (FNS) (1 unit)
- Every quarter: MCDB 260 (2 unit)
- Every quarter as needed: IQB 595 or 596 research units with Advisor

- By end of year three: submit dissertation proposal and take the Advancement to Candidacy Exam to advance to candidacy
- By June 30th: submit Annual Update Form

Subsequent Years

- Every quarter: IQB 262 (1 unit)
- The Committee must convene and approve the final research plan (typically 3-12 months) before defense of the dissertation.
- By end of Spring Quarter of every year: submit Annual Update Form
- Every quarter as needed: IQB 595 or 596 research units with Advisor

Completion Of Doctoral Degree

- Confirm all course work and teaching requirements for a PhD degree are met.
- Prepare and file doctoral dissertation; enroll in IQB 599 (instead of IQB 596).
- Present the final defense seminar.

3.4 Requirement Descriptions

3.4.1 iQB2 Course

Note: iQB2 is a bootcamp-style course co-taught by several faculty that offers hands-on experience in experimental design, instrumentation and modeling. After completing the IQB2 in your first quarter, you will have completed 8 units of core courses. The other courses in the above list do not count toward core units. You will need to take the remaining 7 units of core courses in the first and second year before you can advance to candidacy.

3.4.2 Teaching Requirements

MCDB 500 – Teaching Assistant Orientation (1 unit; offered fall quarter only; required for all incoming first year graduate students): General orientation regarding UC system policies on teaching.
MCDB 501 – Practicum in Instruction: 1-4 units; credit for TA assignment; register in quarter assigned a TAship; units depend on teaching load (50% TAship = 4 units).
MCDB 502 – Teaching Assistant Training: 1-2 units; offered Fall & Winter quarters; register only once prior to or concurrent with first TA assignment.

3.4.3 Lab Rotations

All entering graduate students in IQB Doctoral program who are supported wholly or in part by institutional funds (including University fellowships, teaching assistantships, traineeships, etc.) are expected to complete 20 weeks of laboratory Rotations during the Winter and Spring quarters of their first year of study with the following options:

• One 10-week Rotation corresponds to 4 units of IQB 592

• One 5-week Rotation corresponds to 2 units of IQB 592 (two per quarter)

Scheduling of rotations is at the discretion of the PI, but a minimum commitment by the student of 15-20 hours per week is generally expected. A minimum of 3 rotations in laboratories in different departments are strongly encouraged.
Laboratory rotations serve two purposes:

1. Students learn firsthand about research efforts in diverse disciplines, thus broadening a student's research perspective

2. They allow students and mentors to "match up" so a research advisor may be selected.

Grades will be assigned according to the Satisfactory/Unsatisfactory (S/U) grading system, on the basis of a laboratory meeting presentation or a written summary of the student's laboratory experience, at the faculty member's discretion. A summary of the student's laboratory performance, written by the faculty member, may be placed in the student's permanent academic file. Additionally, the IQB program requires all rotating graduate students to give a ~ 10 min presentation at the end of each quarter on their rotation experience.

During the first year of graduate study and during laboratory rotations, first year Ph.D. students should initiate discussions with prospective faculty mentors about joining their research groups for their dissertation research. All students are normally expected to decide on their doctoral research mentor by the end of spring quarter of their first year, although additional rotations are not precluded if deemed academically necessary by the Faculty Graduate Advisor. Early assignment to a faculty lab by the spring quarter of the first year is also possible if a summer rotation is performed prior to the fall quarter of the first year.

It should be understood that the relationship between student and faculty advisor must be established by mutual consent and only after thoughtful consideration of the possibilities for research in an area of interest to the student. It is also understood that even a 'commitment' may be tentative and may be broken if experience does not sufficiently match the expectations of the student, or of the faculty member.

3.5- Advancement to Candidacy Exam

3.5.1 Committee

Dissertation Committee – The Dissertation Committee for advancement to Ph.D. candidacy will also serve as the candidate's Ph.D. thesis Committee with the important exception that the primary thesis advisor, who will chair the Ph.D. thesis Committee, will not serve on the Dissertation Committee.

If the student's primary thesis advisor does not have a partial appointment or is not an affiliate in IQB, the student must identify a co-chair who does have a partial appointment or is in affiliate status in IQB. Whether the co-chair may serve on the student's Dissertation Committee depends on the degree to which they are involved in the student's research: if they are involved (i.e., a collaborator), they may not serve on the Dissertation Committee; if they are not involved, they may. If the situation is ambiguous, the determination will be made by the Faculty Graduate Advisor.

The composition of the Dissertation Committee should be proposed by the student, in consultation with their primary thesis advisor, and should consist of three UC ladder faculty who have expertise necessary to provide critical evaluation, insight and advice to the student/candidate throughout their thesis research. Graduate Division policy requires that at least two of the Dissertation Committee members (in addition to the co-chair, if any) be faculty in the student's major program of study (IQB, in this case).

After confirming their willingness to serve, the student should submit the names of their proposed Dissertation Committee members (indicating their co-chair, if any) to the Faculty Graduate Advisor for approval. The Faculty Graduate Advisor will designate who, among the approved members, will serve as Chair of the Dissertation Committee.

3.5.2 Timing and Timeline

The advancement to candidacy examination may be taken at any time after the first full year of study and after all core has been completed. The deadline for completing it is the Spring Quarter of the third year, but students are strongly encouraged to complete it before the end of the Summer of their second year. Students after advancing to candidacy have three years to complete their degree and remain in good standing. Therefore foreign students should carefully consider the timeline for advancing to candidacy. For more information please speak to staff or faculty graduate advisors.

Prior to Advancement to Candidacy

Coursework:

- 15 units from core courses – 10 units from chosen primary emphasis & 5 units from other emphasis

- 6 units minimum of IQB 595 – Advanced Topics and IQB 596 – Directed Reading/Research.
- 8 units of IQB 592 – Lab Rotations: 2-4 units each quarter of first year.
- 6 units of Friday Noon Seminar – IQB 262(FNS) (every quarter; 1 unit each; 3 units total per year; 15 units before degree completion).
- 6 units of Seminar- MCDB 260 (Every quarter after first fall quarter; 2 units each)
- 6 units minimum of TA Training – MCDB 500/502

Examinations – In order to qualify for advancement to doctoral candidacy, students must form a doctoral Committee and successfully complete, in addition to the required courses, the advancement to candidacy examination consisting of a written research proposition followed by an oral defense of the proposition. The deadline for completing it is the Spring Quarter of the third year, but students are strongly encouraged to complete it before the end of the Summer of their second year.

The topic of the advancement to candidacy examination is based on the students' dissertation research. The final requirement for the Ph.D. degree is a written dissertation and its oral defense, which usually is in the form of a scheduled interdepartmental seminar.

Academic (Grade) Standards:

Students are expected to maintain a minimum cumulative grade point average of 3.0 with grades of B or better in core course work. Failure to maintain these grade standards will result in:

1. Units not counting towards core unit requirements
2. The student potentially being placed on academic probation (according to the policy of the Graduate Division)
3. Potential dismissal from the program in extreme cases

Research and Teaching Assistants must meet the GPA standard of 3.0 for employment purposes. Students admitted with undergraduate deficiencies must complete all required undergraduate courses, with a letter grade of B or better, during the first year of study.

Year Two and Three:

1. Students will consult with their advisor and set up a Dissertation Committee during Fall Quarter of Year two.
2. Students will submit a filled out Dissertation Committee Form to the Faculty Graduate Advisor by the end of Fall Quarter the second year.
3. Students will begin to construct Abstract

4. The Title and Abstract page of the written proposition shall be submitted to the IQB Staff Graduate Advisor and to the Faculty Graduate Advisor as a PDF file. The student should also attach the name of one additional committee member- separate from the ones listed on the Dissertation Committee Form- at this time with the Abstract.

5. The Faculty Graduate Advisor will determine, in consultation with the student's primary thesis advisor, whether (and in what sense) the student should modify and resubmit a revised Title and Abstract page, and inform the student.

6. The Faculty Graduate Advisor will inform the student whether or not the Abstract is approved. If approved, the Faculty Graduate Advisor will appoint a chair of the committee.

    a. Students should monitor email closely for Grad Point email for committee set up approval. Email link expires so prompt response is required.

7. After approval of the Abstract the student should work on the proposition. The student should plan on delivering a completed proposition within 6 to 8 weeks after approval.

8. When the proposition is finished, students will need to submit the proposition to the Faculty Graduate Advisor who will submit it to all members of the committee.

9. Within two weeks after submission, the Chair will consult with the members of the Dissertation Committee and notify the student whether the written proposition is satisfactory. If the proposition is unsatisfactory, the Chair of the Dissertation Committee will provide a report in writing to the student, identifying deficiencies for correction and identifying a timeframe for resubmission.

10. Once the written proposition is deemed satisfactory, the student should coordinate with their Dissertation Committee members to organize a time for their oral defense and with the IQB Staff Graduate Advisor to arrange a place for the examination.

    a. In the event that the proposition is deemed unsatisfactory, the student will be informed and must meet with the committee chair to receive the feedback. The student must incorporate the feedback before they may resubmit the proposition.

    b. If assistance is needed to book a room, students should reach out to the Staff Graduate Advisor for Assistance.

<u>Note:</u>
Committee members may be consulted at any time during the research phase of the student's graduate study, at the discretion of the student or the Committee chair. Also, Committee members may inquire on their own initiative into the student's progress. An annual meeting of the student with the Dissertation Committee is required and monitored through the Annual Meeting Form.

3.6 Proposition Formation and Writing

Nature of the Proposition – The proposition must be focused on the student's own dissertation project. It should raise original questions of significance and provide explicit approaches to addressing the questions. The amount of work implied by the proposition should not exceed the scope of a typical doctoral research effort (roughly equivalent to a 3-4 year grant proposal). The proposition should contain a working hypothesis or model along with a critical consideration of alternative hypotheses or models. As a rule, a proposition will not be acceptable if it addresses a problem involving one experimental system (e.g. a given species) that has already been solved in another system (e.g. another species).

Consultation During Preparation of Proposition – The topic of the proposition should be developed in consultation with the student's primary thesis advisor. However, the detailed experiments and all the writing must be original to the student. It is appropriate to present preliminary data obtained by the student (computational or experimental) in the written proposition, as well as at the oral defense. However, the student should clearly identify how their proposal is substantially different from any projects they have in progress.

There are certain constraints on the student's freedom to consult or otherwise enlist the aid of others in the course of the preparation of a proposition. Students may consult with the Faculty Graduate Advisor, or with any faculty member, postdoctoral fellow, or other graduate student regarding the general format of the proposition, oral defense or overall examination procedure. However, the written proposition, even early drafts, may not be circulated to anyone- including the student's primary thesis advisor- prior to its submission. After the proposition has been submitted, the student may (and , indeed, is encouraged to) enlist the help of graduate students or postdoctoral fellows, but not faculty, to hold a 'mock exam' to aid the student's preparation for the oral defense.

Format and Content – The proposition must be typewritten in 12 point Times font with 1 inch margins and 1.5 line spacing (the Abstract and the bibliography may be single-spaced) and must consist of a Title Page and the following five sections:

1. Title Page
2. Abstract
3. Introduction and Significance
4. Specific Aims
5. Approach
6. Bibliography

Detailed guidelines for the content of these sections are given in Appendix A.

3.7 Oral Defense of Proposition

The oral defense should be in 'chalk talk' format. PowerPoint presentations are not allowed. Exceptions may be made for research involving data sets that are too complex to explain/illustrate in a chalk talk format. Exceptions must be approved by the Chair of the Dissertation Committee.

The student is expected to have a solid intellectual understanding of the proposition. The background should be understood fully: the student should know who the major contributors have been and should be able to critically evaluate their contributions. The student should also be able to discuss the significance of the proposal and will be expected to defend the rationale for their proposed approach. The student will also be expected to draw on other, relevant areas of knowledge. Precedents for the approach, and the conceptual and theoretical basis for all proposed techniques should be understood. The student must also be able to demonstrate a thorough understanding of the basic knowledge relevant to the proposed research.

While the examination will focus on the proposition itself, students should also expect questions regarding basic principles in all areas relevant to their proposition and commensurate with their successful completion of the IQB's course requirements.

Before the examination, the Faculty graduate Advisor will solicit the opinion of the student's primary thesis advisor on the student's progress to date. The examination typically lasts about 2 hours and involves only the Dissertation Committee and the student.

The examination shall proceed as follows:

- In the absence of the student, the Dissertation Committee will conduct a brief review of the student's file, their written proposition and their progress to degree, including the opinion of the student's primary thesis advisor as collected by the Chair.
- The student will then be called in to answer questions about their proposed research.
- When the Dissertation Committee has no further questions, the student will step out and the Dissertation Committee will discuss the student's performance and determine the outcome of the examination (Pass, Conditional Pass, or Fail) on admission to candidacy. One member of the Dissertation Committee (the Chair, or someone they designate) will take notes.
- The student will again be called in and the Dissertation Committee will inform them of their decision.
- The Chair, in consultation with the Dissertation Committee, will generate a written report summarizing the Committee's determination and any further advice or requirements, and send it to the student, their primary thesis advisor and the Staff Graduate Advisor within one week of the examination.

3.8 Outcomes of Exam

In the case of a Pass– the Dissertation Committee will complete and sign the form recommending admission to candidacy and file it with the Staff Graduate Advisor.

Conditional Pass – In the case of a conditional Pass, the Dissertation Committee may require that the student rewrite all or part of the proposition, or that additional courses be taken, or that the student perform some other tasks to address a deficiency identified during the examination. Once such imposed requirements are completed to the satisfaction of the Dissertation Committee, the Dissertation Committee will complete and sign the form recommending admission to candidacy and file it with the Staff Graduate Advisor.

Repeat examinations – A repeat examination is a matter of right for the student. Repeat examinations may consist of a rewritten proposition only, a repeat of the oral examination only, or both, as determined by the original Dissertation Committee and must be completed by a deadline that is set by the original Dissertation Committee.

The Faculty Graduate Advisor will appoint a second Dissertation Committee, in consultation with the student's primary thesis advisor. This second Dissertation Committee may be identical to the first or may replace any or (rarely) all faculty members from the first Dissertation Committee with other faculty.

If the repeat examination is unsatisfactory, the second Dissertation Committee shall recommend to the IQB faculty that the student be dismissed from the Ph.D. program. Dismissal from the Ph.D. program will be accompanied by a written appraisal by the Faculty Graduate Advisor of the remaining work, if any, that is required for the student to earn a terminal M.S. degree.

3.9 Evaluation of Student Progress, Status, and Time to Degree (Annual Meeting Form)

The performance of all graduate students will be reviewed and evaluated at least once each year by the Dissertation Committee. This will be documented through submission of the Annual Update Form. The performance of first year students will also be reviewed by the Faculty Graduate Advisor in problematic cases, at the end of the first year. These reviews and evaluations will focus, as applicable, on the student's:

1. Progress and ability in the laboratory
2. Progress and performance in courses
3. Progress toward the remedy of course and language deficiencies
4. Performance on the Ph.D. proposition examination.

The Faculty Graduate Advisor will, as necessary, advise students upon completion of their first year regarding their performance. Advice to other students will be given, as appropriate, on the student's progression toward the Ph.D. degree after review by the appropriate program faculty. Such advice may include particular recommendations, notice of specific requirements as a

consequence of certain deficiencies, or dismissal from the program. However, no recommendation will be made to the Graduate Division that a student be dismissed from the program without the endorsement of the appropriate program faculty.

4- Doctoral Dissertation

4.1- Doctoral Dissertation

Committee members may be consulted at any time during the research phase of the student's graduate study, at the discretion of the student or the Committee chair. Also, Committee members may inquire on their own initiative into the student's progress. An annual meeting of the student with the Dissertation Committee is required. The Annual Update Form - found on the IQB Website- must be completed after the annual committee meeting and submitted to the Staff Graduate Advisor after the meeting. While only one meeting is required annually, students are encouraged to meet with their committee as often as needed.

A principal function of the Dissertation Committee is to critically read and ultimately approve the dissertation or thesis. Typically, a 'clean' dissertation or thesis draw-which has already received the mentor's approval-is submitted to members of the Committee whose critical review may aid the student in the completion of the final product. It is the student's responsibility to ascertain that Committee members will be available for reading the dissertation or thesis in a timely fashion. Committee members must be given a reasonable amount of time (at least two weeks) for the completion of this task. Students must advise the appropriate Staff Graduate Advisor and all members of their Committees of their intent to file a dissertation or a thesis by the end of the second week of the quarter in which they intend to file.

All Ph.D. candidates must also give a final oral defense of the dissertation after the written dissertation has been completed and submitted. At the discretion and mutual consent of student and mentor, this defense may be waived, and a formally announced seminar presented instead. This waiver requires the formal consent of the student's Dissertation Committee, affirmed on a special Graduate Division form, which can be obtained from the Staff Graduate Advisor. It is the student's responsibility to make the necessary arrangements for the seminar presentation, with the assistance of the Staff Graduate Advisor.

4.2 Time to Degree

The department will deliver written notification to students if time standards for advancing to candidacy or completing a master’s or doctoral degree have been exceeded. The departmental Faculty Graduate Advisor and the student's faculty mentor/advisor will consult with the student to develop an Academic Progress Plan – Time-to-Degree (signed by the faculty mentor/advisor and the student). Once the Graduate Division receives a copy of the written notification and

Academic Progress Plan – Time-to-Degree, the student will be on departmental progress monitoring status for the remainder of the academic year or until the milestone is completed. For a student who has not advanced to doctoral candidacy or completed the degree after the end of an academic year on probation, the Graduate Dean will ask the department to recommend and justify (a) continued academic probation (must involve extenuating circumstances) or (b) academic disqualification. Departments have the discretion to ask the Graduate Dean for probation or academic dismissal under an earlier time frame. A student is not eligible for central fellowships if they are beyond time-to-degree or normative time advancement to candidacy or degree completion.) For more information please see the Graduate Division Page.

5- BS/MS 4+1 Program

5.1 Degree Offerings

IQB offers a Masters Degree in Biochemistry/Molecular Biology. Our program starts in the senior year of undergraduate study and is finished the following year.

5.2 Application Requirements

1. UCSB Student in their third year of study
2. Must be working in a lab with a PI who is with the IQB Program
3. Undergraduate major: Biochemistry; Molecular, Cellular, and Developmental Biology (MCDB); or Chemistry.
4. The applicant has declared their major at the time of application.
    a. If a major in Biochemistry, Molecular, Cellular and Developmental Biology (MCDB), or Chemistry is not declared, students may still be eligible for the degree as long as they are in the correct premajor and can provide details as to when a full major will be declared.
5. A minimum 3.0 GPA

5.3 Application and Degree Timeline

1. Students will apply by the end of spring quarter in their third year of study
2. Students will send in an application in the form a single PDF document containing a cover page, personal history statement, statement of purpose, and CV following the Grad Division requirements.
3. Three letters of recommendation will be required- one letter is required to come from the PI they are planning on completing their masters degree with. This should be the faculty in whose lab they currently work in. The letters must be sent directly from the recommender to the Staff Graduate Advisor and cannot be shown to the student.
4. Students will need to provide an official transcript that may either be emailed or mailed to the department.
5. Upon acceptance students are encouraged to review checklist materials and select Plan I or Plan II for degree progress.
6. In the start of their final undergraduate year, students are encouraged to begin taking graduate level courses.
7. During the Spring quarter of the final undergraduate year students will begin the process of advancing to graduate standing. During this time students will need to provide all coursework- both undergraduate and graduate- to the Staff Graduate Advisor and indicate whether they would like/which graduate level classes to apply to graduate degree. At this time students are required to have declared a full major.
8. Students will meet with the College of Letters and Science to discuss advancement and degree completion
9. Students will then complete the graduate application and submit a personal history statement, statement of purpose, and CV. Note: students do not need to reobtain letters of recommendation.
10. Once accepted, students will pay fees and submit SIR to complete graduate standing
11. Students should complete all remaining course and lab work during the following three quarters and prepare their thesis. Students must be in graduate standing for at least three quarters before being able to receive a Masters degree. Students must also be awarded Bachelors degree before Masters degree can be awarded.

6- Petitions and Forms

As a rule, students may petition for leaves of absence, inter-program transfers, or regarding certain degree requirements. In most cases, petitions must be made on special forms to be obtained from the Graduate Division. If a student is formally associated with a research advisor, this advisor must signify approval of any petition by initialing it. Finally, petitions must be signed by the IQB Faculty Graduate Advisor prior to submission to the Graduate Division for action.

Leaves of Absence – All students are expected to be 'continuously registered' unless the Dean of the Graduate Division approves a leave 'under special circumstances'. Special limitations apply to students who are not U.S. citizens: they may not apply for a leave of absence unless all of their course and residency requirements have been met or, in case of students in Ph.D. programs, unless they have been advanced to candidacy.

Ph.D. and Dissertation Committee -- The student, after consultation with his/her primary thesis advisor, should propose a dissertation committee, and these names should be submitted to the Faculty Graduate Advisor for approval. It is encouraged that the proposed committee members will have the expertise with the candidate’s research topic, able to provide critical evaluation, insight and advice into the thesis research work. A brief Abstract of the dissertation/written exam should also be submitted at the same time.

Transfers Between Graduate Programs – Students may petition for transfer between the IQB and the Ph.D. programs of the component departments. Petitions of this nature should be made with justification and be supported in writing by at least one faculty member familiar with the student's academic performance and laboratory progress, if applicable. Students contemplating such transfers should first seek information regarding the procedure from the Staff Graduate Advisor, and regarding the academic implications from the Faculty Graduate Advisor. In all cases, the student's petition should contain a concise justification for the transfer. The Graduate Committee will act on the petition, and such petitions will be evaluated in terms of the same criteria and by the same procedures, which apply to original admissions to the program into which the student seeks entry. If it is approved, the student should consult the Faculty Graduate Advisor without delay regarding program requirements. If the Committee is inclined to deny the petition, it will consult with any faculty members who support the petition and may consult also with the appropriate program faculty body before making its final decision.

7- Financial Support

Every effort is made to provide financial support to students in good academic standing who are progressing normally in the IQB graduate program. In the allocation of financial aid, students in good standing in the Ph.D. programs are given preference. It is the student's responsibility to observe application deadlines and requirements scrupulously. Students are urged to stay informed regarding opportunities for financial aid. Eligible first year students are encouraged to apply for extramural pre-doctoral fellowships from the National Science Foundation, the American Cancer Society, and the Howard Hughes Medical Institute. Many additional fellowship opportunities exist for members of underrepresented groups, women, and others. The Office of the Graduate Division should be considered as the primary information source. As a public institution a large share of UC fellowship funds are provided through financial aid monies and each fellowship recipient is required to file the Free Application for Federal Student Aid (FAFSA). Any student hoping for fellowship support should file this form each year. It is available on the Internet: hVp://www.ed.gov/offices/OPE/Students.

7.1 University Scholarships and Fellowships

University Scholarships or Fellowships are usually awarded in conjunction with admission to a Ph.D. program. Recommendations for such awards are made by the appropriate Admissions Committees. Very limited funds may be available for continuing students who have advanced to candidacy.

Fellowships are awarded on the basis of excellence in conjunction with admission to the Ph.D. program. However, in exceptional cases of funding emergencies, some awards may be made to continuing students in response to an application by a student, supported by the student's research advisor.

7.2 Tuition and Fees

Funding to cover Non-Resident Tuition is typically awarded in conjunction with admission to the Ph.D. program or later if the student, because of non---U.S. citizenship, is not able to establish California residency after a year of graduate study. It is the responsibility of first year out-of-state domestic students to establish California residency before their second year of study. As a maJer of University policy, students appointed to Research Assistantships receive payment of their fees and Tuition by the extramural grant, which supports their Research Assistantship.

7.3 GSR (Graduate Student Researcher)

Research Assistantships are expected to provide the principal support of Ph.D. students, particularly after their first graduate year. Students should discuss such support as a Graduate Student Researcher (GSR) directly with their research mentor.

7.4 TAShips (Teaching Assistant Appointment)

Teaching Assistantships at UCSB are allocated through academic departments. Teaching Assistantships for IQB students are typically provided by the MCDB Department. TAships are awarded, upon proper application, to students by the MCDB Vice Chair after consultation with the MCDB Graduate Committee and the MCDB Curriculum Committee. IQB students may also serve as TAs in courses offered by other departments as appropriate. During the Spring quarter, students should consult with their mentors about their needs for TA support in the coming year. Students whose research advisors are members of departments other than MCDB should seek the advice of their research mentor regarding Teaching Assistantship assignments in their home department.

7.5 Graduate Student Association

Graduate Student Association: All UCSB graduate students are automatically members of The UCSB Graduate Students Association (GSA). Your GSA is made up of the graduate student elected Executive Council, General Council, and the general graduate student body. The GSA lounge is located in UCen#2502 (gsa@gsa.ucsb.edu). Visit the GSA website.

The graduate students of IQB and the graduate students of MCDB have formed the Graduate Union of Molecular Biology Investigators (GUMBI). GUMBI was created to facilitate the discussion of graduate student issues, to communicate ideas and opinions to the faculty, to administer graduate student run programs such as the Friday Noon Seminar Series, and to encourage more interaction among graduate students. This organization elects graduate student representatives to graduate program faculty Committees.

8- Appendixes

Appendix A- Guidelines for Written Proposition by Section

Section 1– Title Page and Abstract: The Abstract should be a concise summary of the proposal and may not exceed one page. It should describe the objectives of the proposed work, the experimental approach, and the significance of the project within the context of the field. The Abstract should be preceded by a title page including a description of title, an identification of the student, the primary affiliated laboratory, and all individuals serving on the student's thesis Committee with appropriate titles.

Section 2 – Introduction/Significance: This section, as a rule, should not exceed five pages. It should include the overall objective of the proposed research, a concise description of the research problem, a description of the most significant previous work, the current status of relevant research, and the rationale behind the proposed approach. All statements must be documented with references.

Section 3 – Specific Aims: This section may not exceed one page. The specific aims of the proposed research should be listed and described. (Each specific aim should be amenable to a one or two sentence description.)

Section 4 – Experimental approach: This section, as a rule, should not exceed eight pages. The details of the research plan should be laid out, including a description of the types of proposed experiments, their purpose and the underlying techniques and methods to be used. The principal experiments should be described in the sequence in which they might be carried out. A flow chart can be helpful in this regard; also, the use of appropriate figures (e.g., the schematic representation of a plasmid construct, or a protein's domain structure) is encouraged. It should be indicated how data will be analyzed to provide answers to the specific aims outlined earlier. It should also be indicated how the possible results obtained in given experiments will be interpreted to permit unambiguous decisions regarding alternative hypotheses or models that are being examined. Control experiments, possible difficulties and alternative approaches should be discussed. Excessive experimental detail (on the order of buffer composition, gel preparation procedures, antibody production, etc.) should be avoided, but the student should be prepared to discuss technical details during the oral defense of the proposition. Any preliminary data obtained by the student should be presented in this section as well.

Section 5 – Bibliography: A complete bibliography is required. Each reference must contain the title of the paper and inclusive page numbers.

Appendix B- BCMB Emphasis Courses

Course Number (Crosslisted course number)	Title	Emphasis	Units
IQB 201A	Protein Structure & Function (5wks)	BIOPHENG	2 units
IQB 202/CHEM 202/ MATRL 270	Biomaterials and Biosurfaces	BIOPHENG	3 units
IQB 203	Protein Engineering and Design	BIOPHENG	3 units
IQB 215	Biophysical Thermodynamics	BIOPHENG	2 units
IQB 216 A	Spectroscopy of Biological Molecules	BIOPHENG	2 units
IQB 216B	Diffraction of Biological Molecules	BIOPHENG	2 units
IQB 217	Electrostatics of Biopolymers (5wks)	BIOPHENG	2 units
IQB 219	Basic Microscopy for Quantitative Biology	BIOPHENG	3 units
IQB 244	Informational Macro and Supra molecules (5wks)	BIOPHENG	2 units
IQB 247	Quantitative Methods in Biology	BIOPHENG	3 units
IQB 250	Bionanotechnology (5wks)	BIOPHENG	2 units
IQB 251	Biopharmaceutical Process Engineering (5wks)	BIOPHENG	2 units
IQB 252	Principles of Bioengineering (5wks)	BIOPHENG	2 units
IQB 253	Analytical Biotechnology (5wks)	BIOPHENG	2 units
IQB 255/ CH E 255	Methods in Systems Biology (5wks)	BIOPHENG	2 units
IQB 272	Mechanical Force and Biomolecules	BIOPHENG	3 units

IQB 276A/ MATRL 276A	Biomolecular Materials I: Structures & Function	BIOPHENG	3 units

Appendix C- BIOPHENG Emphasis Courses

Course Number (Crosslisted course number)	Title	Emphasis	Units
IQB 201B	Chemistry and Structure of Nucleic Acids (5wks)	BCMB	2 units
IQB 201C	Biomembrane Structure and Function (5wks)	BCMB	2 units
IQB 205A	Biochemical Techniques (2wks)	BCMB	1 unit
IQB 205B	Strategies in Protein Characterization (5wks)	BCMB	1 unit
IQB 207	Enzyme Mechanisms (5wks)	BCMB	2 units
IQB 218A/ MCDB 218A	Methods and Logic in Molecular Cell Biology I (5wks)	BCMB	3 units
IQB 218B/ MCDB 218B	Methods and Logic in Molecular Cell Biology II	BCMB	5 units
IQB 223	Signal Transduction (5wks)	BCMB	2 units
IQB 229/ MCDB 229	Protein Biochemistry (3wks)	BCMB	2 units
IQB 239	Physical Biology of the Cell	BCMB	4 units

Appendix D- Optional Courses

Course Number (Crosslisted course number)	Title	Emphasis Credit	Units
IQB 204	Post-translational Protein Processing	BCMB	4 units
IQB 206/ BIOE 244	Introduction to Machine Learning for Processing of Biological Images and Structural Biology	BCMB or BIOPHENG	3 units
ME 211	Pattern Formation Self Organizing	BIOPHENG	3 units
BIOE 212	Great Experiments	BIOPHENG	4 units
CHEM 219	Electrochemistry	BCMB or BIOPHENG	4 units
BIOE 220A	Molecular Bioengineering	BCMB or BIOPHENG	4 units
BIOE 220B	Cell and Tissue Bioengineering	BCMB or BIOPHENG	4 units
BIOE 220C	Tissue & Systems Bioengineering	BCMB OR BIOPHENG	4 units
ME 221	Advanced Viscous Flow	BIOPHENG	3 units
IQB 222A	Colloids & Interfaces I	BIOPHENG	3 units
IQB 222B	Colloids and Interfaces II	BIOPHENG	3 units
IQB 226 / MCDB 224	Signal Transduction and Development in Multicellular Systems	BCMB	2 units
BIOE 230	Bioengineering Student Seminar Cell and Tissue Bioengineering	BIOPHENG	1 unit
IQB 232	Bacterial Pathogenesis	BCMB	3 units
IQB 232L	Bacterial Pathogenesis Lab	BCMB	3 units

IQB 233	Cell Biology	BCMB	4 units
IQB 238 /PHYS 238	Soft Matter	BIOPHENG	4 units
IQB 239 /PHYS 239	Physical Biology of the Cell	BIOPHENG	4 units
BIOE 243	Protein Engineering	BCMB or BIOPHENG	3 units
IQB 246	Membrane Biochemistry	BIOPHENG	4 units
MCDB 246	Stem Cell Biology in Health and Disease	BCMB	4 units
ME 246	Molecular and Cellular Biomechanics	BIOPHENG	3 units
IQB 248/ MCDB 248	Practical Statistics for Biologists	BCMB or BIOPHENG	4 units
BIOE 250AD/ ME225EY	Special Topics in Biological Computing	BIOPHENG	3 units
IQB 257/ PHYS 257	Special Topics in Bio Physics	BIOPHENG	1-4 units
IQB 258/ BIOE 258/ ME 258	Methods in Mechanobiology and Biofabrication	BIOPHENG	3 units
IQB259/ CHEM 259	Special Topics Biochemistry	BCMB	1-4 units
IQB 259BG	Bacterial Genetics	BCMB	2 units
CHEM 262 A	Drug Design	BCMB	3 units
CHEM 162B/262B	Drug Discovery and Design	BCMB	3 units
IQB 264	Literature in Signal Transduction	BCMB	1 unit
CHEM 271	Bioinorganic Chemistry	BCMB	3 units
MATRL 271B	Structure and Characterization of Complex Fluids	BIOPHENG	3 units

MATRL 272	Mechanical Forces and Biomolecules	BIOPHENG	3 units
BIOE 272	OMICS-Enabled Biotechnology	BCMB	3 units
MCDB 272	Biological Dynamics	BCMB or BIOPHENG	4 units
ECE 274	Neurally Inspired Computing Systems	BIOPHENG	4 units
IQB 276B/ MATRL 276B	Biomolecular Materials II	BIOPHENG	3 units
IQB 290	Group Studies	NA	2 units
IQB 293	Computational Methods	BCMB	1 unit
EEMB 509	Levels of Biological Org II	BIOPHENG	4 units
ECE 594N	Special Topics in Electrical and Computer Engineering	BIOPHENG	4 units

Note: Many IQB courses are 5 week, 2 unit modules; check the current Schedule of Classes for dates offered in any given quarter.

Appendix E- Hibernating Courses

(Courses that have not been offered in at least five years)

IQB 201C	Biomembrane Structure and Function (5wks)	BCMB	2 units
IQB 203	Protein Engineering and Design	BIOPHENG	3 units
IQB 216A	Spectroscopy	BIOPHENG	2 units
IQB 216B	Diffraction of Biological Molecules	BIOPHENG	2 units
IQB 217	Electrostatics of Biopolymers	BIOPHENG	2 units
IQB 222B	Colloids and Interfaces II	BIOPHENG	3 units
IQB 223	Signal Transduction (5wks)	BCMB	2 units
IQB 233	Cell Biology	BCMB	4 units
IQB 235	Experimental Strategies in Molecular Genetics	BCMB	2 units
IQB245	Computational Biochemistry	BCMB	3 units
IQB 246	Membrane Biochemistry	BIOPHENG	4 units
IQB 250	Bionanotechnology	BIOPHENG	2 units
IQB 251	Biopharmaceutical Process Engineering	BIOPHENG	2 units
IQB 252	Principles of Bioengineering	BIOPHENG	2 units
IQB 253	Analytical Biotechnology	BIOPHENG	2 units
IQB 255	Methods in System Biology	BIOPHENG	3 units
IQB 256	Stem Cell Biology	BIOPHENG	2 units
IQB 257/ PHYS 257	Special Topics in Bio Physics	BIOPHENG	1-4 units
IQB 264	Literature in Signal Transduction	BCMB	1 unit
MATRL 272	Mechanical Forces and Biomolecules	BIOPHENG	3 units
IQB 276B/ MATRL 276B	Biomolecular Materials II	BIOPHENG	3 units