

**A Survival Guide for Students, Faculty and
Graduate Advisors
2019-2020**

July 2019

Dear Colleagues,

Please find enclosed a handbook with pertinent information for BMCDB faculty, students and advisors.

“Steps to a degree”, outlines the major events that must be completed throughout a student’s journey to the Ph.D., as well as information for PSTP, VSTP, and Masters students. This includes what is required of the student, the academic advisor, the major professor, the graduate group chair and coordinator.

This is followed by mentoring guidelines, and coursework information.

The appendixes include Progress report and dissertation committee forms, as well as an updated list of faculty in the program.

Your feedback on this handbook is greatly appreciated. Let me know what we can do to make it more informative for next year.

Sincerely,

A handwritten signature in black ink, appearing to read "Bruce Draper". The signature is fluid and cursive, with the first name "Bruce" written in a larger, more prominent script than the last name "Draper".

Bruce Draper
Chair, BMCDB

Table of Contents

Steps to a degree: A Guide for Graduate Advisors, Students & Faculty.....	4
• Progress Report Year 1	6
• Progress Report Year 2	7
• Qualifying Exam/Advancement to Candidacy	7
• Progress Reports after Advancement to Candidacy.....	9
• Completion of Degree Requirements	9
• Where to go if Problems Arise	10
• PSTP students.....	10
• Transfer between the Ph.D. program and the M.S. program.....	14
Mentoring Guidelines	15
Appendix 1: BMCDB Course Requirement Form.....	18
Appendix 2: Approved Graduate Elective Courses	19
Appendix 3: Dissertation Committee Forms	22
Appendix 4: BMCDB Faculty Roster	24
Appendix 5: BMCDB Bylaws	29
Appendix 6 BMCDB Degree requirements.....	35

STEPS TO THE PH.D. IN BMCDB: A GUIDE FOR GRADUATE ADVISORS, STUDENTS & FACULTY

Cast of Characters

Graduate Group Chair:	Bruce Draper, 530-752-0833 (bwdraper@ucdavis.edu)
Graduate Group Coordinator:	Kelli Smith, 530-752-9091 (kmasmith@ucdavis.edu)
Graduate Advisors:	Enoch Baldwin, 530-752-1108 (epbaldwin@ucdavis.edu) Kermit Carraway (Sacramento), 916-734-3114 (klcarraway@ucdavis.edu) Elva Diaz, 530-754-6080 (ediaz@ucdavis.edu) Bruce Draper, 530-752-0833 (bwdraper@ucdavis.edu) JoAnne Engebrecht, 530-754-6034 (jengebrecht@ucdavis.edu) Chris Fraser, 530-752-1716 (csfraser@ucdavis.edu) Damian Genetos, 530-754-0146 (dgenetos@ucdavis.edu) Qizhi Gong, 530-754-7656 (qzgong@ucdavis.edu) Paul Knoepfler (Sacramento), 916-453-2289 (knoepfler@ucdavis.edu) Jon Sack, 530-752-4131 (jsack@ucdavis.edu) Mitch Singer, 530-752-9005 (mhsinger@ucdavis.edu) Dan Starr, 530 754-6083 (dastarr@ucdavis.edu) Richard Tucker (MS only adviser) 752-0238 (rptucker@ucdavis.edu) Karen Zito, 530-752-7832 (kzito@ucdavis.edu) Parmita Ghosh (Sacramento), 916-734-7805 (paghosh@ucdavis.edu)
Student Affairs Officer in Graduate Studies:	Rachel De Los Reyes, 530-752-5079 (radelosreyes@ucdavis.edu)

*Current information can be found on the Graduate Studies Website:

<https://grad.ucdavis.edu/programs/gbcb>

1. **Before first-year students arrive on campus**

Prior to arrival on campus, BMCDB graduate students will receive a letter by early summer that will include:

- a. Financial aid package
- b. A request from BCB 220L instructor to identify, schedule, and report their first rotation choice to the BMCDB graduate group coordinator.
- c. A request for the student to enroll in 12 units using Schedule Builder
- d. Schedule of the mandatory orientations and events they must attend prior to the first day of class.
- e. Name and contact information of Academic Advisor. Students are required to meet with their advisors upon entering BMCDB and quarterly for advice during the first year.

Group Chair:

- will determine financial aid packages
- will plan orientation meeting and first week schedule
- will compose the above letter with the help of the Coordinator

Coordinator:

- will make sure all new students attend TA Orientation
- will help Group Chair organize the Orientation week schedule
- will serve as the primary contact for answering questions
- will assemble orientation packets

2. **Orientation to the Graduate Program**

Typically, on the Friday before the first day of the Fall Quarter there will be an orientation meeting for the first-year students. This meeting will be run by the Chair and Graduate Coordinator. At the meeting, students will be informed of:

- a. Schedule of activities for the first week including: reception for new students, TA training sessions, etc.
- b. The need to complete enrollment for the Fall Quarter
- c. If appropriate, how to get their paycheck
- d. Instructions for how to apply for California Residency (if not yet a resident)
- e. General information about the BMCDB Graduate Program

3. **Graduate Academic Advisor:**

Additionally, each student will be scheduled for a meeting with their Graduate Academic Advisor. During the meeting with the **Graduate Academic Advisor** the following will be discussed:

- a. Undergraduate preparation and the need for any remedial courses (see Appendix 1)
- b. Course schedule for the Fall Quarter
- c. Assessment of research interests
- d. Stress the requirement for one quarter of TA experience

It is the charge of the Academic Advisor, in collaboration with the student, to develop an academic plan during the first month of the Fall Quarter for the next two years that satisfies the requirements of the BMCDB Graduate Program and will prepare the student for their qualifying exam (to be taken at the end of the second year). The advisor and student will discuss course requirements for the BMCDB program and the development of a schedule for the next two years.

Note: Topics and examiners for the qualifying exam can be discussed at a subsequent meeting with the Academic Advisor, typically during the Fall or Early Winter Quarter of the second year.

Graduate Coordinator:

- will prepare the file
- will assist with the scheduling of the meeting with the Graduate Advisor

4. Progress Assessment and Individual Development Plan-Year One

Campus policy requires that every graduate academic advisor complete an annual report of each graduate student's progress. In addition to the Student Progress Assessment (SPA), the BMCDB Graduate Group has implemented an Individual Development Plan (IDP) requirement. These assessments must be complete by July 1 every year. To complete these items, **first-year students** will meet with their Major Professor to complete the online progress assessment and IDP followed by a meeting with the Graduate Academic Advisor, who will determine:

- a. The requirements for the degree that remain to be completed,
- b. If the student is making normal progress toward the degree,
- c. That the student has joined a lab, and that they and the Major Professor have agreed on how the student will be supported for the remainder of their tenure in the Major Professor's laboratory.

At this meeting, the student and the Graduate Advisor confirm the online progress report. The online report must be confirmed by the Major Professor, Graduate Advisor and Student by **the end of June**.

Graduate Coordinator:

- Will send notifications of the Student Progress Assessment to each student near the beginning of the Spring Quarter, generally April 1st.
- Will periodically remind students that the reports must be filed and notify the Major Professor (if there is one) or the Graduate Advisor if the student has not returned the progress report in a timely manner.
- Will upload the Student's IDP to Grad Hub once signed by student and Major Professor

Graduate Student:

- Must schedule a meeting with their Major Professor to review IDP and SPA
- Must make an appointment to see the Graduate Advisor after meeting with their Major Professor to review SPA, must submit their IDP to the Graduate Coordinator by June 12th

Graduate Advisor:

- Must carefully assess student progress and requirements left for the degree
- Must confirm the IDP has been completed and uploaded into Grad Hub, will then, confirm the progress report

Major Professor:

- Must make clear their plans to support the graduate student. **If TAships will be necessary for part or all of the financial support, the student must apply for TA positions and be aware of the deadlines for applications.**

It should be emphasized that the student has several sources of advice available at all times prior to being advanced to candidacy. These include the:

- a. Major Professor
- b. Graduate Advisor
- c. Chair of the BMCDB Graduate Program
- d. Group Coordinator
- e. Student Mentorship Committee

However, only the Graduate Advisor has signature authority, including approving waivers of graduate group curriculum, approval of S/U grading, etc.

5. Progress Assessment and Individual Development Plan-Year Two

In the Fall or early Winter Quarter of the second year the student, after discussion with their major professor, must meet with their Graduate Advisor and discuss:

- a. Topics for the oral exam
- b. Possible examiners for the oral exam
- c. Any remaining requirements, which must be completed before the oral exam and advancement to candidacy (TA requirement must be fulfilled prior to the QE)

Graduate Coordinator:

- Will send notifications of the Student Progress Assessment (SPA) to each student near the beginning of the Spring Quarter, generally April 1st.
- Will periodically remind students that the reports must be filed and notify the Major Professor (if there is one) or the Graduate Advisor if the student has not returned the progress report in a timely manner.
- Will upload the Student's IDP to Grad Hub once signed by student and Major Professor
- Will provide Qualifying Exam Contract to students during their meeting with the Student Affairs chair in the Fall quarter

Graduate Student:

- Will arrange a meeting with their Major Professor to review IDP and SPA
- Must make an appointment to see the Graduate Advisor after meeting with their Major Professor to review SPA, must submit their IDP to the Graduate Coordinator by June 12th
- Will be responsible for seeing that the proper paperwork is filed with Graduate Studies for the composition of the oral examining committee. This must be done well in advance of the exam.

Graduate Advisor & Major Professor:

- Same as year one (see above).

6. Qualifying Exam/Advancement to Candidacy- Spring Quarter Year Two

A student in the Ph.D. program should take their qualifying exams at the end of Spring Quarter of their second year. If they require Spring Quarter to finish coursework or TA requirements, the qualifying exam can be taken during the summer of their second year. They may take it earlier if they wish. Only exceptional circumstances will exempt a student from the summer deadline, which may include: serious illness, temporary withdrawal from the academic program (PELP), debilitating personal problems, or a switch in major professors. Major Professors should note that the Graduate Advisors

will not approve the delay of a student's oral exam because a Major Professor requires additional data collected for a grant proposal or a manuscript.

The oral portion of the qualifying exam is intended to demonstrate the student's critical thinking ability, synthesis, and broad knowledge of the field of study. The student must also submit a research proposal to each member of his/her examining committee of no more than 5 pages, written in the format of the Research Plan of an NIH proposal, that outlines his/her proposed thesis research. If a student has not accumulated sufficient preliminary data, the proposal will necessarily be more general in nature so that the examining committee has evidence that a student can formulate hypotheses and experimentally test them. Note: The focus of the proposal is not on the students' own preliminary data, but rather to determine if the student can formulate hypotheses based on prior work from the lab or the literature, then propose approaches that experimentally test those hypotheses. Therefore, a student will not be able to delay their orals if they have not generated what they or their Major Professor consider sufficient preliminary data.

Research proposals should be distributed to the examining committee no later than 2 weeks prior to the exam date.

Qualifying examination committees will consist of five faculty members who are recommended to Graduate Studies by the BMCDB Student Affairs Committee in the Winter quarter of the student's second year. Three members will be selected by the BMCDB student with solicited input from major advisers and graduate advisors. Ideally, two of these faculty will also serve on the student's dissertation committee. The remaining two faculty will be selected by the Student Affairs Committee to ensure coverage of the core areas of BMCDB (i.e. Biochemistry, Molecular Genetics, Cell Biology, and Developmental Biology). Qualifying examination committees are submitted to Graduate Studies and appointed in accordance with the Academic Senate regulations. The chair of the qualifying examination committee is expected to ensure that the student receives a fair examination. Qualifying Examination Committees may not include the major professor who will serve as chair of the student's dissertation committee. The area of the student's dissertation research will be considered so that at least one individual with expertise in this area is a member of the qualifying examination committee. These names are forwarded to the Office of Graduate Studies for formal appointment in accordance with Graduate Council policy (DDB 80. Graduate Council B.1.). The "Application for Qualifying Examination" can be found at: <https://grad.ucdavis.edu/current-students/forms-information>

* Please note that students are requested to *not* provide food or drink to the examining committee.

7. Appointment of the Thesis Committee (Ph.D. Program)

When a student passes his/her oral exam they must file the paperwork with Graduate Studies for "Advancement to Candidacy." This document is signed by the Chair of the Dissertation Committee, the student, and the Graduate Advisor. In consultation with the major professor, who will serve as Chair, the student will select two members for the thesis committee. ONLY ONE member of the Thesis Committee may come from outside the BMCDB Graduate Group, and the proposed members should be contacted for their availability before turning in the paperwork. This committee must be approved by the Graduate Advisor (as indicated by their signature). The signed document is submitted by the student to Graduate Studies for approval.

The student should file this document **immediately** after successfully passing the qualifying exam. Foreign students should remember that their tuition is reduced considerably after they file the papers for "Advancement to Candidacy."

8. **Progress Reports After a Student has Advanced to Candidacy**

Once a Ph.D. student has advanced to candidacy, they will be working full-time on their dissertation research, although students are still encouraged to participate in seminar courses and journal clubs. The only formal requirement during this time is to meet yearly with the thesis committee. At this time:

- a. The student will give **an oral presentation** of progress to date on his/her thesis research and provide the committee with a **written summary** of the research accomplished in the previous year and work that must be finished.
- b. The Thesis Committee will advise the student about his/her progress, will provide written comments on the Dissertation Committee Report under “Recommendations to Student”, and all members will sign the report. In addition, the Major Professor (Chair of the Thesis Committee) must also sign the report, indicating the student’s progress as satisfactory, marginal, or unsatisfactory.
- c. The Graduate Advisor must also complete the student progress assessment.
- d. The Student will submit the signed Dissertation Committee Report with the research summary to the Graduate Coordinator

Third Years- Progress Assessment, Individual Development Plans and Dissertation Committee Reports are due by the **end of Spring Quarter**.

Fourth Years: Progress Assessment, Individual Development Plans, and Dissertation Committee Reports are due by the **end of WINTER quarter**.

Fifth years and above: Schedule a meeting for Fall quarter at the beginning of the 5th year, and at a minimum every 6 months thereafter. Advisors may waive the Fall meeting if they feel there is clear evidence of progress and graduation is imminent. **Interim Dissertation Report forms are available for the midyear meeting; the normal progress assessment, Individual Development Plan and dissertation report should be filled out in the spring quarter as usual.**

The extra meetings are to facilitate discussion by all members as to what is needed for the student to complete their thesis in a timely fashion (ie by the end of the 5th or sometime in the 6th year). This discussion should include whether additional experiments should be carried out, and also whether the thesis chapters need to be published, or at least submitted, before the committee will sign off on the thesis. The BMCDB group does not require a certain number of publications for completion of the Ph.D. Rather, the status of thesis chapters is left to the discretion of the major professor and dissertation committee, and thus should be discussed the committee well in advance of when completion is expected. We recommend that students provide their committee with an outline of the thesis at least 6 months prior to the expected completion date that was noted on the last progress report.

A student’s progress will be reported as unsatisfactory if they do not give an oral presentation of their thesis research to their thesis committee.

9. **Completion of Ph.D. Degree Requirements**

A student will have completed all the requirements for the degree when:

- a. The written dissertation is signed by the Major Professor and the two other thesis committee members. While there are no explicit rules defining an adequate dissertation, it is the expectation that the research will be of publishable quality, and that the research represents a significant contribution to the research area.

A website with guidelines for completing the dissertation can be found at: <https://grad.ucdavis.edu/resources/graduate-student-resources/academic-information-and-services/filing-thesis-or-dissertation> Also, all OGS forms are here: <https://grad.ucdavis.edu/resources/forms>

- b. The student gives an exit seminar. The exit seminar should be a widely advertised event held on campus.

10. **Where to go and what to do if problems arise**

It is everyone's desire for students to successfully obtain their Ph.D. in a timely manner. The best way to ensure this is to take advantage of the resources available throughout your tenure in graduate school. Meeting regularly with your academic advisor, especially in the early stages of the Ph.D. program, will ensure that you are enrolled in the correct courses and are in good academic standing. Your advisor can also help you in selecting a lab in which to perform your thesis work.

The qualifying exam in the second year can be a very stressful experience. Communicating with your major professor about the time you need to study is very important. Your fellow students can greatly help with studying general knowledge and practicing presentations. Furthermore, your lab mates can help ensure that you are prepared for the examination on your thesis work.

Once you have advanced to candidacy, your yearly meeting with your thesis committee is essential to make sure you are on track to complete your degree. If necessary, more frequent meetings can be scheduled. If you find that you are not progressing as expected, or have conflicts with your major professor, your committee can help to determine a course of action. Also remember that you can go to your academic advisor for additional help and support. Your academic advisor can act as an impartial mediator throughout your graduate career and should be used as general resource if any questions or problems arise.

Especially in cases where you have a conflict with your major professor and need guidance, you should contact your academic advisor as well as the group chair. The group coordinator and the student mentoring committee are additional resources to seek advice and help. Finally the university has counseling services free of charge.

Student Health and Counseling Services: <https://shcs.ucdavis.edu/counseling-services>, (530)752-0871, 219 North Hall

11. **PSTP students**

Due to the nature of the PSTP program there are some differences with the normal course of progression to your Ph.D. In particular,

- a. Core courses: PSTP students in BMCDB will be required to take the Medical School 410B and BCM405 courses and the Graduate School MCB 210-215 (Molecular Genetics & Genomics, Biochemistry, Cell Biology, Developmental Biology, Molecular Biology, Readings Course, see attached). The IOR for Medical School 410A has agreed to accept B or better grades in the core courses for 410A credit. The BCM405 Medical School course can be taken to satisfy elective credits.

- b. Lab rotations: Students will rotate in at least 3 different laboratories for four 5-week rotations. These laboratory rotations will not be restricted to the fall and winter quarter and may include rotations taken as part of a required Summer PSTP Research Training Program immediately preceding formal matriculation. However, PSTP BMCDB students will be required to prepare a written and oral report of their research to be arranged during the subsequent fall or winter quarters in which MCB220L is in session. Please note that PSTP students must be registered for MCB220L for two quarters and present a total of 4 written and oral reports to fulfill the requirements; however, as the lab rotations will be spread out in time the presentations can be given in quarters in which the student is not registered for the course. **It is the students' responsibility to contact the current instructors of MCB220L in the quarter they wish to present their rotation talks and to make sure that a record of participation is recorded in the BMCDB office**
- c. TA responsibilities: Not required for MSTP Training grant funded students, but highly recommended.
- d. PSTP students will have the same requirements as other BMCDB students with respect to other course and advancement requirements. This includes 2 electives and ethics training. These requirements can be fulfilled with Medical School courses. Please consult with your academic advisor about the specific courses that are eligible. Further, the qualifying exam will be conducted as with other BMCDB students.

12. M.S. degree in Biochemistry, Molecular, Cell and Developmental Biology must complete each of the following:

- a. All University Requirements for the Master's Degree, as specified in the Graduate Advisor's Handbook, U.C. Davis. Plan 1 OR Plan 2

Plan 1: Thesis Option

- a. *Satisfactory completion of 30 units of upper division and graduate level course work, including at least 12 units of BMCDB core courses, AND*
- b. *Submission of a thesis.* The subject of the written thesis must be approved by the Masters Advisor and the Dean of Graduate Studies. The thesis must be submitted to a committee of three members of the Graduate Group faculty, who are nominated by the Masters Advisor, and appointed by the Dean of Graduate Studies. The thesis must be signed by each of the three committee members to be acceptable. If one member of the committee dissents, then a majority and minority report are submitted to the Dean of Graduate Studies, who will make the final decision. If two or more members of the committee find the thesis unsatisfactory, then the student must be given a written description of the deficiencies and an appropriate and specific time in which to correct the deficiencies. The thesis is then submitted to the committee for re-evaluation. If the thesis is still unacceptable to the majority of the committee, then the majority may recommend to the Dean of Graduate Studies that the student be disqualified from further graduate study.

Implementation of the Thesis Option

Fall Quarter: The student meets with a Masters Degree Advisor during the orientation week and establishes an academic plan that will meet the requirements of the program if completed successfully. During the Fall Quarter the student should also begin to formulate a topic for the thesis.

Winter Quarter: In addition to taking the required courses, the student should meet with the Masters Degree Advisor during the month of January to determine the subject of the written thesis. When the topic is approved by both the Masters Degree Advisor and the Dean of Graduate Studies, the student and advisor meet to formulate the Thesis Reading Committee. This committee will be available to assist the student in preparing outlines, finding references, etc. At the end of the quarter, the student applies for advancement to candidacy (see below). Bench research (BCB299) in a laboratory designated by the Masters Degree Advisor and student is an option during this quarter and the Spring Quarter.

Spring Quarter: According to Graduate Council policy, the finished thesis must be given to each member of the committee at least four weeks before the filing deadline (approximately April 1). It is our group's policy that the Thesis Reading Committee will inform the student if the thesis is acceptable or if revisions are necessary at least two weeks before the filing deadline. The revised thesis must be given to each member of the committee at least one week before the filing deadline. This version will be either approved or the student will be disqualified from further graduate study.

Note: This sample scenario shows a student completing the degree in 3 quarters, which means writing the thesis while taking a full load of courses. The sample Academic Plan shown below includes units of Independent Study (MCB299) incorporated into both the Winter and Spring quarters to make this realistic. However, the program may also be completed over a longer period if the student and Graduate Advisor establish a longer academic plan (e.g., one that involves original bench research or TAing).

Example of an Academic Plan for the Thesis Option:

Fall:

- MCB210 (Molecular Genetics and Genomics, 3 units);
- MCB 211 (Biochemistry and Biophysics, 3 units),
- MCB259 (Literature in Developmental Biology, 1 unit);
- MCB291 (Current Progress in Molecular and Cellular Biology, 1 unit),
- STA100 (Statistics, 4 units);—12 units total

Winter:

- MCB212 (Cell Biology, 3 units);
- MCB213 (Developmental Biology, 3 units);
- GER040 (Great German Short Stories, 4 units);
- BCB299 (Independent Study, 2 units)—12 units total

Spring:

- MCB214 (Molecular Biology, 3 units);
- MCB259 (Literature in Developmental Biology, 1 unit);
- MCB291 (Current Progress in Molecular and Cellular Biology, 1 unit),
- MCB299 (Independent Study, 7 units)—12 units total

Totals: 32 units upper division and graduate level course work, 15 units BMCDB core courses

Plan 2: Examination Option

- a. *Satisfactory completion of 36 units of upper division and graduate level course work.* At least 18 of these units must be graduate course work in Biochemistry, Molecular, Cell and Developmental Biology. Of the 18 units of graduate course work, 15 units should come from the BMCDB core course, no more than 9 units may be research (299 or equivalent), AND

- b. *Satisfactory completion of a written or oral comprehensive final examination*, which shall cover three subject areas in Biochemistry, Molecular, Cell and Developmental Biology, selected by the student and the graduate advisor. The examination committee will consist of three members of the graduate group, nominated by the graduate advisor, and appointed by the Graduate Dean. Graduate Studies requires that the vote be unanimous in order to pass. If the student fails to pass the exam, the examination committee may recommend that the student be reexamined one time. If the Graduate Advisors agree with this recommendation, the student may be reexamined. Failure to pass the reexamination may result in a recommendation that the student be disqualified from further graduate study.

Implementation of the Examination Option

Fall Quarter: The student meets with a Masters Advisor during the orientation week and establishes an academic plan that will meet the requirements of the program if completed successfully.

Winter Quarter: In addition to taking the necessary courses, the student should meet with the Masters Advisor during January to determine the examiners for the comprehensive examination. After contacting the examiners and confirming their participation, the exam committee is submitted to the Dean of Graduate Studies for approval. Near the end of the quarter, the student applies for advancement to candidacy (see below).

Spring Quarter: The comprehensive exam should be held at least two weeks before the end of the session. The Examination Committee will inform the student at the end of the exam if the exam was: 1) a pass, 2) a no pass, or 3) if a re-examination is necessary. A re-examination should be scheduled before the end of the Spring Quarter.

Example of an Academic Plan for the Examination Option:

Fall:

- MCB210 (Molecular Genetics and Genomics, 3 units);
- MCB 211 (Biochemistry and Biophysics, 3 units),
- MCB259 (Literature in Developmental Biology, 1 unit);
- MCB291 (Current Progress in Molecular and Cellular Biology, 1 unit),
- STA100 (Statistics, 4 units);—12 units total

Winter:

- MCB212 (Cell Biology, 3 units),
- MCB213 (Developmental Biology, 3 units),
- (Seminar in Developmental Biology, 2 units);
- MCB259 (Literature in Developmental Biology, 1 unit);
- NSC226 (Molecular and Developmental Neurobiology, 4 units)—13 units total

Spring:

- MCB214 (Molecular Biology, 3 units);
- MCB259 (Literature in Developmental Biology, 1 unit);
- MCB291 (Current Progress in Molecular and Cellular Biology, 1 unit),
- BCB299 (Independent Study, 7 units)—12 units total

Total: 37 units toward degree, 15 units BMCDB core courses, 4 units approved elective(s)

13. Transfer between the Ph.D. program and the M.S. program

Students in the Ph.D. program can earn the M.S. degree only by transferring to the M.S. program. This can be done at any point prior to advancement to candidacy after consulting with the Dissertation Advisor (if applicable) and Graduate Advisor. Note that a change of degree objective form must be completed in a timely manner. Both M.S. degree options are available. Students in the M.S. program can apply to the Ph.D. program during the Fall Quarter of their first year. If they are accepted into the Ph.D. program the courses they have taken toward the M.S. will transfer as courses toward the Ph.D., and the student will withdraw from the M.S. program without earning the M.S. degree.

Note: For ALL candidates for the M.S. in BMCDB:

- a. Courses must be approved by the Masters Advisor.
- b. Only courses in the 100 or 200 series, for which a grade of A, B, C, or S is received, will satisfy the requirements.
- c. Cumulative grade point average in courses taken to satisfy the requirements for this degree must be 3.0 or greater.
- d. After completion of at least one half the required units, the student must file an official application for Advancement to Candidacy. Forms are available in Rm., 250, Mrak Hall.

Mentoring Guidelines

Mentoring is defined as a close relationship between a graduate student and a faculty member who provides guidance, support and research advice in an individualized manner.

Graduate Council recognizes that the mentoring of graduate students by faculty is an integral part of the graduate experience for both. The responsibilities of the faculty mentor are broad and diverse. They include, but are not limited to serving as a role model, advising a student as to course work requirements, and providing formal instruction in a given discipline as well as helping students identify and achieve their individual short and long-term educational goals.. While the major professor usually acts as a student's primary mentor, many of the mentoring "functions" described below, may also be performed by other program/group faculty and staff over the course of a student's graduate experience. A corollary to this recognition is that much of the interaction of faculty with all students includes important mentoring components. Similarly, graduate students have important responsibilities to ensure they are open to and accepting of faculty mentoring and articulate their needs effectively. Thus, it is together that faculty and students identify and discuss their goals and expectations for each other, and outline approaches to reach those goals and satisfy those expectations.

Basic mentoring practices include guiding students through program expectations, protocols of academic conduct, degree requirements, research and teaching, capstone work (such as thesis or dissertation research), and professional development.

1. Mentors and/or the advising system should provide, and students should acquire, a clear map of program requirements from the beginning, making clear the coursework requirements, and expected timelines for completion of all required examinations and capstone requirements.

Mentors are responsible for

1. Respecting their student, including the student's identity including race, ethnicity, gender and gender expression, age, visible and non-visible disability, nationality, sexual orientation, citizenship status, veteran status, religious/non-religious, spiritual, or political beliefs, socio-economic class, status within or outside the university, or any of the other differences among people.
2. Assisting students in the identification of support networks (people who can help the student for different aspects of their tenure at UCD).
3. Being a student's advocate and assisting the student in a timely manner in finding sources to support dissertation research (teaching assistantships, research assistantships, fellowships, research needs and required resources, including desk and/or laboratory space).
4. Addressing problems or challenges that could affect completion of the degree as soon as they become aware of them.
5. Tailoring, modifying or adjusting the faculty member's mentoring style to the particular needs of each graduate student, to a reasonable extent.
6. Encouraging an open exchange of ideas, including by empowering students to independently follow research ideas of their own whenever feasible.
7. Checking regularly on progress. Graduate Council recognizes each graduate program/group, mentor and mentee should agree upon a reasonable frequency of meetings and communications, which may vary widely by discipline, but should not usually occur less than at least once per quarter.
8. Encouraging and giving feedback on written work, oral presentations and experimental work in a timely manner within a mutually agreed upon time frame, and consistent with Graduate Council policies

9. Providing and discussing clear criteria for authorship of collaborative research, consistent with Graduate Council policies on co-authorship.
10. Encouraging participation in professional meetings of regional groups as well as of learned societies and facilitating interactions and networking with other scholars, on campus and within the wider professional community.
11. Helping the student in identifying appropriate resources for career guidance, providing help with preparations of CV and job interviews, as well as writing letters of recommendation in a timely manner.
12. Empowering and encouraging the student in seeking their own career paths and supporting the student independent of the chosen career paths they identify.
13. Participating regularly in mentorship training.

As partners in the mentoring relationship, graduate students have responsibilities. These responsibilities include:

1. Respecting their mentor, including their mentor's identity including race, ethnicity, gender and gender expression, age, visible and non-visible disability, nationality, sexual orientation, citizenship status, veteran status, religious/non-religious, spiritual, or political beliefs, socio-economic class, status within or outside the university, or any of the other differences among people
2. Seeking assistance from multiple individuals/organizations to fulfill the mentoring roles described above, because one faculty member may not be able to satisfy all of a student's mentoring needs.
3. Understanding and clearly articulating to their mentors their own mentoring needs and how they change through their graduate tenure.
4. Respecting their mentor's other responsibilities and time commitments.
5. Communicating regularly with their mentors, especially their major professor, including updates on progress, challenges, needs, goals and expected completion timelines.
6. Completing tasks in a timely fashion and following mutually agreed upon timelines and informing mentors about expected absences and delays before they occur.
7. Participating in departmental and graduate program/group community including attending activities, lectures, and events.
8. Acting in a manner that will encourage professors to see them as colleagues. Seeking constructive criticism and feedback on academic work.
9. Seeking information, exploring career options and developing clear career goals.
10. Participating regularly in mentee-ship training.

While we have tried to provide general examples of what mentoring means, we recognize that each discipline has its own special set of mentoring needs and challenges. Therefore, Graduate Programs/Groups may set specific guidelines to further define the individual roles of Graduate

Advisors, major professors, faculty supervisors, and staff program/group advisors (see Appendix below for an example). Graduate programs/Group mentoring guidelines and activities will be reviewed during the program review process.

Additional Resources and guidelines

- I. [Mentoring Matters \(UC Davis\)](#)
- II. [How to Mentor Students: A Guide for Faculty \(University of Michigan\)](#)
- III. [Research Mentoring: Cultivating Effective Relationships \(University of Wisconsin\)](#)

Revised by Graduate Council
June 27, 2016

Mentoring Appendix: Example Breakdown of Roles and Responsibilities

- a. Academic advisors are expected to
 - i. Communicate degree requirements to advisees.
 - ii. Respond promptly to communications from advisees.
 - iii. Set clear expectations for the timeline of degree progress.
 - iv. Review mentees degree progress on an annual basis.
 - v. Meet with student's academic advisory committee as required by the graduate program.

- b. Major professors are expected to
 - i. Set clear and reasonable expectations for their students.
 - ii. Respond promptly to communications from students.
 - iii. Review expectations and progress on a regular basis.
 - iv. Provide timely feedback on student's preparation of publications, conference presentations, exhibitions, performances, or comparable communication with the academic community.
 - v. Establish in advance a mutual understanding on criteria for co-authorship of collaborative work consistent with Graduate Council policy, if applicable.
 - vi. Hold meetings of student's dissertation committees as required by the graduate program.
 - vii. Provide clear guidelines for starting and finishing dissertation or thesis work
 - viii. Meet individually with each of their students to review degree progress, goals and other topics on a quarterly basis.

- c. Faculty supervisors of graduate students are expected to:
 - i. Set clear and reasonable expectations for their supervisees.
 - ii. Respond promptly to communications from supervisees.
 - iii. Insure justifiable resource allocation among supervisees.
 - iv. Establish in advance a mutual understanding on criteria for co-authorship of collaborative work consistent with Graduate Council policy.
 - v. Compensate supervisee financially for work for the supervisor, but unrelated to their degree progress.
 - vi. Review supervisee's performance on an annual basis.
 - vii. Comply with applicable policies and laws regarding employer-employee relationships including non-discrimination and sexual harassment laws.

APPENDIX 1. BMCDB Graduate Group Course Requirement Form

Student Name: _____ Date: _____

Advisor Name: _____

Graduate Courses at UCD:

REQUIRED CLASSES – 1st year

<u>Fall</u>		<u>Winter</u>		<u>Spring</u>	
MCB 220 L	_____	MCB 220 L	_____	BCB 299	_____
MCB 210	_____	MCB 212	_____	MCB 214	_____
MCB 211	_____	MCB 213	_____	MCB 215	_____
MCB 291	_____	MCB 291	_____	MCB 291	_____
GGG 296	_____			Elective	_____

Summer: BCB 290 _____

2nd year

BCB 299	_____	BCB 299	_____	BCB 299	_____
MCB 291	_____	MCB 291	_____	MCB 291	_____
Elective	or	Elective	or	Elective	or
TA	or	TA	or	TA	or

Students must earn a grade of B- or better in each of the six core classes. CHECK WHETHER ALTERNATE YEAR CLASSES ARE OFFERED IN THAT YEAR!!!!

Student Signature: _____ Date: _____

Graduate Advisor Signature: _____ Date: _____

APPENDIX 2. Graduate Elective Courses Approved to Meet Ph.D. Degree Requirements

This list was compiled from both the most recent and an older General Catalog, some things may be out of date. Consult the most recent General Catalog for course availability.

The General Catalog, including updates, can be found at: <http://registrar.ucdavis.edu/UCDWebCatalog/>

Course	Course Name	Units
ABG 401	Ethics and Professionalism in Animal Biology	2
BCB 255	Molecular Mechanisms in Pattern Formation and Development	3
BCB 256	Cell and Molecular Biology of Cancer	3
BCB 257	Cell Proliferation and Cancer Genes	3
BCB 298	Computer Programming in Molecular and Cellular Biology	1 -3
BCM 230	Practical NMR Spectro. And Imaging	1
BCM/BPH 231	Biological Nuc. Magnetic Res.	3
BIM 242	Biomedical Imaging	4
BIM 270	Biochemical Systems Theory	4
BIM 272	Tissue Engineering	3
BPH 200/MCB 200	Current Techniques in Biophysics	2-3 (differentiated between paper and excel sheet)
BPH 241	Membrane Biology	3
CDB 205	Cell Biol. Of the Cytoskeleton	2
BST 226	Statistical Methods for Bioinformatics	4
CHE 216+	Magnetic Resonance Spec.y	3
CHE 217	X-Ray Structure Determination	3
CHE 218	Macromolecules: Physical Principles	3
CHE 219	Spectroscopy of Organic Comps	4
CHE 221D	Special Topics in Organic Chemistry	3
CHE 221G	Special Topics in Organic Chemistry	3
CHE 237	Bio-organic Chemistry	3
CHE 238	Introduction to Chemical Biology	3
CHE 241C	Mass Spectrometry	3
CHE 245	Mechanistic Enzymology	3
CHE 261	Current Topics in Chemical Research	2
CHE 263	Introduction to Chemical Research Methodology	3
CHE 264	Advanced Chemical Research Methodology	6
CLH 212	Introduction to Stem Cell Biology	3
CLH 230	Congestive Heart Failure, Mechanism of Disease	3
CLH 231	Current Techniques in Clinical Research	2
CLH 250	Integrating Medicine Into Basic Science	6

ECS 124	Theory and Practice of Bioinformatics	4
EDO 240	Biochemical Endocrinology	3
ETX 214+	Mechanisms of Toxic Action	3
EVE 298	Group Study	1 - 5
FST 201	Food Chemistry and Biochemistry	4
FST 204	Advanced Food Microbiology	3
FST 210	Proteins: Functional Act. And Interact	3
FST 211	Lipids: Chemistry and Nutrition	3
GGG 201A	Advanced Genetic Analysis	5
GGG 201B	Genomics	5
GGG 201C	Molecular Genetics Mechanisms in Disease	4
GGG 201D	Quant. And Population Genetics	5
GGG 210	Horizontal Gene Transfer	3
GGG 295	Seminar in Molecular Genetics	1 - 3
IMM 201	Introductory Immunology	4
MCB 123	Anal. Of Enz. & Receptor Sys.	3
MCB 126	Plant Biochemistry	3
MCB 143	Cell and Molecular Biophysics	3
MCB 162	Human Genetics and Genomics	3
MCB 163	Developmental Genetics	3
MCB 182	Principles of Genomics	3
MCB221B/CHE 221B	Mechanistic Enzymology/Enzymes and Metabolism	4
MCB 241	Membrane Biology	3
MCB 248	Seminar in Cell Biology	2
MCB 251	Biology of Fertilization	3
MCB 252	Cellular Basis of Morphogenesis	4
MCB 258	Seminar in Development	2
MCB 291	Current Prog. In Molec. & Cell. Biol.	1
MCP 200L	Animal Cell Culture Laboratory	4
MCP 210A-210B- 210C	Advanced Physiol.	4
MCP 219	Muscle Growth and Development	3
MCP 220	Gen. and Compar. Physiol. Of Repro.	3
MCP 222	Gametogenesis and Fertilization	4
MIC 200A	Biology of Prokaryotes	3
MIC 200B	Advanced Bacteriology	3
MIC 215	Recombinant DNA	3
MIC 250	Biology of Yeasts	5
MIC 262	Advanced General and Molecular Virology	3
MIC 263	Principles of Protein-Nucleic Acid Interactions	3

MIC 274	Seminar in Genetic Recombination	1
MIC 275	Seminar in DNA Repair and Recombi.	1
MIC 276	Advanced Concepts in DNA Metabolism	3
MIC 292	Seminar in Bacterial Physiology and Genetics	1
MMI 200D	Mechanisms for Microbial Interactions with Hosts	3
MMI 280	The Endogenous Microbiota in Health and Disease	3
NPB 107	Cell Signaling in Health and Disease	3
NPB 212	Light and Fluorescence Microscopy	2
NPB 270/NSC 270	How to Write a Fundable Grant Proposal	3
NPB 287A	Topics in Theoretical Neuroscience	2
NSC 201	Neuroanatomy	3
NSC/NPB 221	Cellular Neurophysiology	4
NSC 226	Molec. And Dev. Neurobiology	4
NUT 252	Nutrition and Development	3
PBI 208	Plant Hormones and Regulators	4
PBI 214	Higher Plant Cell Walls	3
PBI 217	Membrane Biology of Plants	3
PBI 219	Repro. Biol. Of Flowering Plants	3
PBI 220	Plant Developmental Biology	4
PBI 227	Plant Molecular Biology	4
PBI 229	Molec. Biology of Plant Reproduction	3
PHA 207	Drug Discovery and Development	3
PHA 208	Advanced Cardiac Physiology and Pharmacology	3
PHA 225	Gene Therapy	3
PHA 250	Functional Genomics: From Bench to Bedside	2-3 (differentiated between paper and excel sheet)
PLB 113	Molecular and Cellular Biology of Plants	3
PLP/BCM 217	Molecular Genetics of Fungi	3
PSC 209A	Introduction to Programming: Matlab	4
PSC 271A	Memory & Plasticity I	2
PTX 202	Princ. Of Pharm. And Toxicol. 2	4
PTX 277	Moleular Mechanisms in Cancer & Disease	3
STA 100	Applied Statistics for Biological Sciences	4
STA 102	Introduction to Probability Modeling and Statistical Inference	4
STA 141	Statistical Computing	4
STA 205	Statistical Methods for Research	4
STA 252	Adv Topics in Biostatistics	4
STA 237A	Time Series Analysis	4
VCR 220	Genomi. & Biotech. Of Plant Improv.	3

**BMCDB GRADUATE GROUP
DISSERTATION COMMITTEE REPORT**

Name: _____

Date Dissertation Committee met: _____

1. Title of dissertation or description of research project:

2. Progress Summary: (Student should attach a 2-3 page Research Progress Summary)
3. Check the progress that the student has made over the past academic year:

___ Satisfactory ___ Marginal ___ Unsatisfactory

Comments regarding progress and recommendations to student from Dissertation Committee:
This must be filled out by the Committee even if progress is satisfactory. In addition, if there are concerns or unsatisfactory progress, please specify why and explain either here or in an attached memorandum the precise conditions, including deadlines, the student must fulfill to achieve a satisfactory report and return to good academic standing. Use back if necessary.

4. Expected completion date: _____
5. Additional comments (e.g. discussion of postdoctoral opportunities):

Dissertation Committee:	(name)	(signature)
Major professor:	- _____	- _____
	- _____	- _____
	- _____	- _____

APPENDIX 5. BMCDB Faculty Roster

New members are joining all the time! More up-to-date information can be found at the BMCDB webpage: <https://bmcdb.ucdavis.edu/faculty>

Adamopoulos, Iannis	iadamopoulos@ucdavis.edu	MED: DIV OF INTERNAL MED
Afkarian, Maryam	mafkarian@ucdavis.edu	MED INT MED - NEPHROLOGY
Al-Bassam, Jawdat M.	jmalbassam@ucdavis.edu	MOLECULAR & CELLULAR BIO
Albeck, John	jgalbeck@ucdavis.edu	MOLECULAR & CELLULAR BIO
Arsuaga, Francisco Javier	jarsuaga@ucdavis.edu	MOLECULAR & CELLULAR BIO
Atsumi, Shota	satsumi@ucdavis.edu	CHEMISTRY
Attardo, Geoffrey Michael	gmattardo@ucdavis.edu	ENTOMOLOGY/NEMATOLOGY
Baar, Keith	kbaar@ucdavis.edu	NEURO PHYSIO & BEHAVIOR
Baldwin, Enoch P	epbaldwin@ucdavis.edu	MOLECULAR & CELLULAR BIO
Barlow, Jacqueline H	jhbarlow@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS
Baumgarth, Nicole	nbaumgarth@ucdavis.edu	VM: PATHOLOGY, MICRO, & IMMUN
Baumler, Andreas J.	ajbaumler@ucdavis.edu	MED: MEDICAL MICROBIOLOGY & IMM
Beal, Peter A	pabeal@ucdavis.edu	CHEMISTRY
Bers, Donald M	dmbers@ucdavis.edu	MED: PHARMACOLOGY
Bevins, Charles L	clbevins@ucdavis.edu	MED: MEDICAL MICROBIOLOGY & IMM
Blumwald, Eduardo	eblumwald@ucdavis.edu	PLANT SCIENCES
Borodinsky, Laura N	lnborodinsky@ucdavis.edu	MED: PHYSIOLOGY & MEMBRANE BIOL
Borowsky, Alexander D	adborowsky@ucdavis.edu	MED: PATHOLOGY & LAB MEDICINE
Brady, Siobhan Mary	sbrady@ucdavis.edu	PLANT BIOLOGY
Brown, Nadean L	nlbrown@ucdavis.edu	MED: CELL BIOLOGY & HUMAN ANAT
Burgess, Sean Marie	smburgess@ucdavis.edu	MOLECULAR & CELLULAR BIO
Burns, Marie E	meburns@ucdavis.edu	MED: OPHTHALMOLOGY
Callis, Judy	jcallis@ucdavis.edu	MOLECULAR & CELLULAR BIO
Carraway, Kermit L	kclearaway@ucdavis.edu	MED: BIOCHEM & MOLECULAR MED
Chedin, Frederic Louis	flchedin@ucdavis.edu	MOLECULAR & CELLULAR BIO
Chen, Ching-Hsien	jchchen@ucdavis.edu	MED INT MED - PULMONARY MED
Chen, Hongwu	hwzchen@ucdavis.edu	MED: BIOCHEM & MOLECULAR MED
Chen, Tsung-Yu	tycchen@ucdavis.edu	MED: NEUROLOGY
Chen, Xinbin	xbchen@ucdavis.edu	VM: SURG/RAD SCIENCE
Cheng, Hwai-Jong	hjcheng@ucdavis.edu	NEURO PHYSIO & BEHAVIOR
Chiu, Joanna Chungyen	jcchiu@ucdavis.edu	ENTOMOLOGY
Collins, Sean R	srcollins@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS
Cortopassi, Gino A	gcortopassi@ucdavis.edu	VM: MOLECULAR BIO SCIENCES
David, Sheila S	ssdavid@ucdavis.edu	CHEMISTRY
Dawson, Scott C	scdawson@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS

Dennis, Megan Y	mydennis@ucdavis.edu	MED: BIOCHEM & MOLECULAR MED
Diaz, Elva Denise	ediaz@ucdavis.edu	MED: PHARMACOLOGY
Diaz, Samuel L	samdiazmunoz@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS
Dinesh-Kumar, Savithramma P	spdineshkumar@ucdavis.edu	PLANT BIOLOGY
Drakakaki, Georgia	gdrakakaki@ucdavis.edu	PLANT SCIENCES
Draper, Bruce W.	bwdraper@ucdavis.edu	MOLECULAR & CELLULAR BIO
Engbrecht, Joanne	jengebrect@ucdavis.edu	MOLECULAR & CELLULAR BIO
Facciotti, Marc Tancredi	mtfacciotti@ucdavis.edu	BIOMEDICAL ENGINEERING
Fairclough, Robert H	rhfairclough@ucdavis.edu	MED: NEUROLOGY
Ferns, Michael J	mjferns@ucdavis.edu	MED: ANESTH & PAIN MEDICINE
Fiehn, Oliver	ofiehn@ucdavis.edu	MOLECULAR & CELLULAR BIO
Fisher, Andrew J	ajfisher@ucdavis.edu	CHEMISTRY
Fitzgerald, Paul G	pgfitzgerald@ucdavis.edu	MED: CELL BIOLOGY & HUMAN ANAT
Franz, Annaliese K	akfranz@ucdavis.edu	CHEMISTRY
Fraser, Christopher S.	csfraser@ucdavis.edu	MOLECULAR & CELLULAR BIO
Furlow, John David	jdfurlow@ucdavis.edu	NEURO PHYSIO & BEHAVIOR
Gelli, Angela C	acgelli@ucdavis.edu	MED: PHARMACOLOGY
Genetos, Damian C	dgenetos@ucdavis.edu	VM: ANAT PHYSIO & CELL BIOLOGY
Ghosh, Paramita Mitra	paghosh@ucdavis.edu	MED: UROLOGY
Giulivi, Cecilia Roxana	cgiulivi@ucdavis.edu	VM: MOLECULAR BIO SCIENCES
Glaser, Thomas M	tmglaser@ucdavis.edu	MED: CELL BIOLOGY & HUMAN ANAT
Gomes, Aldrin V	avgomes@ucdavis.edu	NEURO PHYSIO & BEHAVIOR
Gong, Qizhi	qzgong@ucdavis.edu	MED: CELL BIOLOGY & HUMAN ANAT
Gray, John A	john.gray@ucdavis.edu	MED: NEUROLOGY
Hagerman, Paul J	pjhagerman@ucdavis.edu	MED: BIOCHEM & MOLECULAR MED
Hagiwara, Nobuko	nhagiwara@ucdavis.edu	MED INT MED - CARDIOVASCULAR
Haj, Fawaz George	fghaj@ucdavis.edu	NUTRITION
Hammock, Bruce D	bdhammock@ucdavis.edu	ENTOMOLOGY
Harada, John J	jjharada@ucdavis.edu	PLANT BIOLOGY
Haudenschild, Dominik Rudolf	drhaudenschild@ucdavis.edu	MED: ORTHOPEDIC SURGERY
Hell, Johannes W	jwhell@ucdavis.edu	MED: PHARMACOLOGY
Heyer, Wolf D	wdheyer@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS
Ho, Hsin-Yi Henry	hyhho@ucdavis.edu	MED: CELL BIOLOGY & HUMAN ANAT
Horne, Mary C	mhorne@ucdavis.edu	MED: PHARMACOLOGY
Huising, Mark Olaf	mhuising@ucdavis.edu	NEURO PHYSIO & BEHAVIOR
Hunter, Neil	nhunter@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS
Hwang, Changil	cihwang@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS
Izumiya, Yoshihiro	yizumiya@ucdavis.edu	MED: DERMATOLOGY

Jao, Li-En	ljao@ucdavis.edu	MED:CELL BIOLOGY & HUMAN ANAT
Ji, Hong	hgji@ucdavis.edu	VM: ANAT PHYSIO & CELL BIOLOGY
Juliano, Celina E	cejuliano@ucdavis.edu	MOLECULAR & CELLULAR BIO
Kaplan, Kenneth B.	kbkaplan@ucdavis.edu	MOLECULAR & CELLULAR BIO
Kim, Sung Jin	sjkim@ucdavis.edu	MED:MEDICAL MICROBIOLOGY & IMM
Knoepfler, Paul S	knoepfler@ucdavis.edu	MED:CELL BIOLOGY & HUMAN ANAT
Knowlton, Anne A	aaknowlton@ucdavis.edu	MED INT MED - CARDIOVASCULAR
Kopp, Artyom V	akopp@ucdavis.edu	EVOLUTION & ECOLOGY
Korf, Ian	ifkorf@ucdavis.edu	MOLECULAR & CELLULAR BIO
Kowalczykowski, Stephen C	sckowalczykowski@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS
La Torre Vila, Anna	alatorre@ucdavis.edu	MED:CELL BIOLOGY & HUMAN ANAT
Lagarias, J Clark	jclagarias@ucdavis.edu	MOLECULAR & CELLULAR BIO
Lasalle, Janine M	jmlasalle@ucdavis.edu	MED:MEDICAL MICROBIOLOGY & IMM
Last, Jerold A	jalast@ucdavis.edu	MED INT MED - PULMONARY MED
Leal, Walter Soares	wsleal@ucdavis.edu	ENTOMOLOGY
Leary, Julie A	jaleary@ucdavis.edu	MOLECULAR & CELLULAR BIO
Lebrilla, Carlito B	cblebrilla@ucdavis.edu	CHEMISTRY
Letts, James A	jaletts@ucdavis.edu	MOLECULAR & CELLULAR BIO
Lewis, Jamal	jamlewis@ucdavis.edu	BIOMEDICAL ENGINEERING
Li, Jian-Jian	jjli@ucdavis.edu	MED: RADIATION ONCOLOGY
Li, Yuanpei	lypli@ucdavis.edu	MED: BIOCHEM & MOLECULAR MED
Lin, Su-Ju	slin@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS
Lin, Yu-Fung	yflin@ucdavis.edu	MED:ANESTH & PAIN MEDICINE
Liu, Bo	bliu@ucdavis.edu	PLANT BIOLOGY
Lo, Su Hao	shlo@ucdavis.edu	MED: BIOCHEM & MOLECULAR MED
Lott, Susan E	selott@ucdavis.edu	EVOLUTION & ECOLOGY
Marsh-Armstrong, Nicholas	nmarsharmstrong@ucdavis.edu	MED: OPHTHALMOLOGY
Martinez-Cerdeno, Veronica	vmartinezcerdeno@ucdavis.edu	MED:PATHOLOGY & LAB MEDICINE
Mckenney, Richard James	rjmckenney@ucdavis.edu	MOLECULAR & CELLULAR BIO
McNally, Francis J	fjmcnally@ucdavis.edu	MOLECULAR & CELLULAR BIO
Montpetit, Benjamin Hubert William	benmontpetit@ucdavis.edu	VITICULTURE & ENOLOGY
Mudryj, Maria	mmudryj@ucdavis.edu	MED:MEDICAL MICROBIOLOGY & IMM
Nolta, Jan	janolta@ucdavis.edu	MED INT MED - HEMATOLOGY/ONCOL
Nord, Alexander Star	asnord@ucdavis.edu	NEURO PHYSIO & BEHAVIOR
Nunnari, Jodi	jmnunnari@ucdavis.edu	MOLECULAR & CELLULAR BIO
O'Donnell, Martha Eaton	meodonnell@ucdavis.edu	MED:PHYSIOLOGY & MEMBRANE BIOL
Ori-Mckenney, Kassandra	kmorimckenney@ucdavis.edu	MOLECULAR & CELLULAR BIO
Parales, Rebecca E	reparales@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS

Payne, John A	japayne@ucdavis.edu	MED:PHYSIOLOGY & MEMBRANE BIOL
Pleasure, David E	depleasure@ucdavis.edu	MED: NEUROLOGY
Powers, Ted Edmund R	erpowers@ucdavis.edu	MOLECULAR & CELLULAR BIO
Privalsky, Martin L	mlprivalsky@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS
Ralston, Katherine Sampson	ksralston@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS
Rose, Alan B.	abrose@ucdavis.edu	MOLECULAR & CELLULAR BIO
Rose, Lesilee S.	lsrose@ucdavis.edu	MOLECULAR & CELLULAR BIO
Roshanravan, Baback	broshanr@ucdavis.edu	MED INT MED - NEPHROLOGY
Sack, Jon T	jsack@ucdavis.edu	MED:PHYSIOLOGY & MEMBRANE BIOL
Santana, Luis Fernando	lfsantana@ucdavis.edu	MED:PHYSIOLOGY & MEMBRANE BIOL
Schneider, Lark L (Lark Coffey)	lcoffey@ucdavis.edu	VM: PATHOLOGY, MICRO, & IMMUN
Segal, David	djsegal@ucdavis.edu	MED: PHARMACOLOGY
Shabek, Nitzan	nshabek@ucdavis.edu	PLANT BIOLOGY
Shah, Priya S	prsshah@ucdavis.edu	CHEMICAL ENGINEERING
Shaw, Jared T	jtshaw@ucdavis.edu	CHEMISTRY
Shih, Patrick M	pmsih@ucdavis.edu	PLANT BIOLOGY
Shiozaki, Kazuhiro	kshiozaki@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS
Siegel, Justin Bloomfield	jbsiegel@ucdavis.edu	MED: BIOCHEM & MOLECULAR MED
Simo Olivar, Sergi	ssimo@ucdavis.edu	MED:CELL BIOLOGY & HUMAN ANAT
Singer, Mitchell H.	mhsinger@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS
Smith, Lucas Robert	lucsmith@ucdavis.edu	NEURO PHYSIO & BEHAVIOR
Starr, Daniel A.	dastarr@ucdavis.edu	MOLECULAR & CELLULAR BIO
Sweeney, Colleen A	casweeney@ucdavis.edu	MED: BIOCHEM & MOLECULAR MED
Takada, Yoshikazu	ytakada@ucdavis.edu	MED: DERMATOLOGY
Tan, Cheemeng	cmtan@ucdavis.edu	BIOMEDICAL ENGINEERING
Tarantal, Alice Faye	aftarantal@ucdavis.edu	MED: GENERAL PEDIATRICS
Theg, Steven M.	smtheg@ucdavis.edu	PLANT BIOLOGY
Tian, Li	ltian@ucdavis.edu	PLANT SCIENCES
Tian, Lin	lintian@ucdavis.edu	MED: BIOCHEM & MOLECULAR MED
Trimmer, James	jtrimmer@ucdavis.edu	NEURO PHYSIO & BEHAVIOR
Tsolis, Renee M	rmtsolis@ucdavis.edu	MED:MEDICAL MICROBIOLOGY & IMM
Tucker, Richard Parke	rptucker@ucdavis.edu	MED:CELL BIOLOGY & HUMAN ANAT
Usrey, Anne K (KIM MCALLISTER)	kmcallister@ucdavis.edu	MED: NEUROLOGY
Vaughan, Andrew	atvaughan@ucdavis.edu	MED: RADIATION ONCOLOGY
Voss, John C	jcvooss@ucdavis.edu	MED: BIOCHEM & MOLECULAR MED
Wan, Jiandi	jdwan@ucdavis.edu	CHEMICAL ENGINEERING
Wan, Yu-Jui Yvonne	yjywan@ucdavis.edu	MED:PATHOLOGY & LAB MEDICINE
Wang, Aijun	aawang@ucdavis.edu	MED: SURGERY

Weiss, Robert H	rhweiss@ucdavis.edu	MED INT MED - NEPHROLOGY LAB
Whistler, Jennifer Lynne	jlwhistler@ucdavis.edu	MED:PHYSIOLOGY & MEMBRANE BIOL
Wilson, David K.	dkwilson@ucdavis.edu	MOLECULAR & CELLULAR BIO
Wiltgen, Brian J.	bjwiltgen@ucdavis.edu	PSYCHOLOGY
Winey, Mark E	mwiney@ucdavis.edu	COLLEGE BIO SCI DEANS OFFICE
Xiang, Yang Kevin	ykxiang@ucdavis.edu	MED: PHARMACOLOGY
Xu, Lifeng	lfxu@ucdavis.edu	MICROBIOLOGY & MOLEC GENETICS
Yamada, Soichiro	syamada@ucdavis.edu	BIOMEDICAL ENGINEERING
Yao, Wei	yao@ucdavis.edu	MED INT MED - GIMIC
Yarov-Yarovoy, Vladimir	yarovoy@ucdavis.edu	MED:PHYSIOLOGY & MEMBRANE BIOL
Yiu, Glenn C	gyiu@ucdavis.edu	MED: OPHTHALMOLOGY
Yu, Aiming	aimyu@ucdavis.edu	MED: BIOCHEM & MOLECULAR MED
Zarbalis, Konstantinos	kzarbalis@ucdavis.edu	MED:PATHOLOGY & LAB MEDICINE
Zerbe, Philipp	pzerbe@ucdavis.edu	PLANT BIOLOGY
Zhao, Min	minzhao@ucdavis.edu	MED: DERMATOLOGY
Zhou, Chengji	cjzhou@ucdavis.edu	MED:CELL BIOLOGY & HUMAN ANAT
Zito, Karen M	kzito@ucdavis.edu	NEURO PHYSIO & BEHAVIOR

APPENDIX 6. BMCDB Bylaws

Graduate Group in Biochemistry, Molecular, Cellular & Developmental Biology (BMCDB) BYLAWS

Administrative Home: **Graduate Group Complex Life Science**

Approved by Graduate Council: April 15, 2009

ARTICLE I. OBJECTIVE

The Graduate Groups in Biochemistry, Molecular, Cellular & Developmental Biology (hereafter referred to as BMCDB or the Group) is organized primarily to establish and administer graduate education leading to the M.S. and Ph.D. degrees in conformance with the rules of the Graduate Council and the Office of Graduate Studies of the Davis Campus of the University of California. A function of equal importance is to provide a focus on research in molecular biology by facilitating the research interaction of graduate students, faculty and postdoctorals. Postdoctoral training is considered part of the groups mission.

Discipline: The study of fundamental biological problems at a molecular level. Experimental approaches used to address these problems range from the atomic and ultra-structural levels to the cellular and organismal levels. Research in the groups reflects traditional disciplinary strengths in biochemistry, molecular genetics, cell and developmental biology, as well as interdisciplinary approaches that combine biology, chemistry, physics, engineering, math and/or computational approaches.

Mission: The Group is organized to administer the graduate groups in BMB/CDB. The Group may consider and act upon any matters pertaining to those programs. The Group functions as a mechanism for curricular structure in training students in molecular biology at UC Davis and fosters interactions and collaborations among faculty pursuing molecular biological research through different academic departments.

ARTICLE II. MEMBERSHIP

A. Criteria for Membership in the Graduate Group

1. Disciplinary expertise, research area, and accomplishments.

The Group consists of those faculty members of the Davis campus qualified to guide candidates for the M.S. and Ph.D. degrees in BMB and CDB. Interested faculty having strong interest and expertise in biochemistry, molecular genetics, and cell & developmental biology whose appointment authorizes the direction of graduate work, may be elected to membership in the Group by the Executive Committee.

Members shall hold an appropriate academic title as (a) a member of the Academic Senate of the University of California (includes Professors, Lecturers with Security of Employment, Professors in Residence, Professors of Clinical “__”, Professors Emeritus/a, and Research Professors), (b) Adjunct Professor, (c) Lecturer (without Security of Employment) or (d) Lecturer Without Salary. Academic staff with primary appointments as Cooperative Extension Specialists or in the Professional Research series are not eligible to be members of graduate programs unless they also hold an appropriate instructional title (normally Lecturer Without Salary).

2. Active research-appropriate to the discipline(s) encompassed by the groups.

Members must have training in fields related to Biochemistry, Molecular Genetics, Cell and/or Developmental Biology and be engaged in an active research that meets the expectations of the University of California in order to provide appropriate guidance to graduate students. A member should have formal training in Biochemistry, Molecular Genetics, Cell & Developmental Biology, as evidenced by M.D., M.S. or Ph.D. degrees or peer-reviewed publications in Biochemistry, Molecular Genetics, Cell and/or Developmental Biology.

3. Voting rights, per Graduate Council policy and Academic Senate Rule 55.

All active members are eligible to vote on graduate matters, except those defined in Section C. Emeritus.

B. Application Process

Candidates apply directly to the Membership Committee. Admissibility shall be determined by the Membership Committee with review by the Executive Committee of the Group. If the Executive Committee does not concur with the decision of the Membership Committee, the final decision will be made by joint consideration of the two. A majority vote of both committees would then determine the applicant's membership. The applicant should provide the following materials to the Membership Committee:

1. BMB/CDB New Membership Application form and CV which includes the following: Education, training and prior professional appointments;
2. The month and year of appointment to the UC-Davis faculty;
3. Peer-reviewed publications for at least the last three years;
4. External grant support, including source of funds and principal investigator;
5. Membership in other graduate groups;
6. The program enrolled in, year of graduation and current position of all students for whom candidate has served as major professor.

Anticipated Contributions by Members

Graduate faculty members are expected to contribute through any of the following:

1. Active role in the administration of the graduate group by serving on administrative committees; as a graduate adviser (not to be confused with a major professor); or as an administrative officer of the group.
2. Providing graduate level instruction, as appropriate, in addition to research instruction.
3. Service on dissertation and qualifying examinations/Master's comprehensive examination committees, etc.

C. Emeritus

Emeritus faculty who are members of the Group are afforded full rights, except Emeritus faculty who no longer run active research programs; they may attend and participate in Group activities, including meetings, but are not afforded the right to vote on policy and Bylaw issues related to the Group. Emeritus faculty are eligible to teach in graduate courses and serve on student dissertation committees.

D. Verification of Continued Membership.

Each faculty member's contributions to the Group shall be reviewed once every three years for the purpose of identifying faculty members who are not providing a minimal level of service to the Group.

This review will be conducted by the Committee on Membership, who will review on a yearly basis one third of the membership. The review will focus on the areas defined in Section B. above, "Anticipated Contributions by Members." Faculty whose record reflects poor performance in any of these areas will be subject to nonrenewal or to a probationary period in which greater involvement must be demonstrated as a condition of continuing membership.

E. Membership Appeal Process

If membership is denied, a faculty can appeal to the Executive Committee. Applicants denied membership or renewal of membership may make a final appeal to the Dean of Graduate Studies.

ARTICLE III. ADMINISTRATION

The academic leadership and management of the Group shall be vested in the Group Chair and an Executive Committee. The Chair is the chief officer and spokesperson for the Group and for the Executive Committee. Management of the Group shall be open and democratic.

ARTICLE IV. GROUP CHAIR

A. Appointment of the Chair.

The graduate group chair nomination process will be conducted in accordance with current Graduate Council and Academic Personnel Manual policies, APM Section UCD-245B.

<https://academicaffairs.ucdavis.edu/sites/g/files/dgvnsk2376/files/inline-files/245b.pdf>.

A “Nominating Committee” will be named by the Executive Committee or Chair to solicit nominations for Graduate Group Chair from the faculty and graduate students of the Group. The name(s) of the candidate(s) indicating a willingness to serve will then be submitted to the Group’s faculty and graduate students for comments. All comments will be kept confidential by the Nominating Committee and the Dean of Graduate Studies.

The Nominating Committee will forward candidate(s) name(s) to the Dean of Graduate Studies along with all commentary received on the candidates. The Group may express a preference and, if it does, should indicate the basis for determining that preference. After interviewing the nominees the Dean of Graduate Studies will forward his/her recommendation to the Chancellor. The normal term of the Chair’s appointment is a maximum of 3 years; however, shorter terms are possible, based on the nominee’s willingness to serve.

B. Duties of the Chair.

The chair shall be the chief officer and spokesperson for the Group and for the Executive Committee. The chair is also the chair of the Educational Policy Committee. The chair shall call and preside over meetings of these bodies. The chair shall appoint, with approval of the Executive Committee, standing committee chairs, standing committee and special committee members, and shall recommend to the Dean of Graduate Studies appointment of graduate advisors, with approval of the Executive Committee. Insofar as practicable, graduate advisors shall be appointed for renewable two-year periods with staggered terms.

The chair shall maintain liaison with biochemistry, molecular genetics, cell and developmental biology groups on other campuses of the University and with related groups on the Davis campus.

C. Vice Chair

The Executive Committee shall select of and for itself, and for the Group, a Vice Chair to serve for a three-year term of service. The Vice Chair will vote on all issues brought before the Executive Committee. The Vice Chair will serve as chief officer of the Group in the absence of the Chair, for less than a quarter. If the Chair will be absent from campus for more than a quarter, the Chair appointment procedures must be followed.

ARTICLE V. COMMITTEES

Executive Committee

The Executive Committee shall consist of the chair of the Group, who serves as chair of the committee, plus six faculty elected from the membership, plus the Master Adviser and one student appointed annually by the BMB/CDB Graduate Students' Association. To ensure broad participation, the Executive Committee shall have members from at least three different departments (tri-department rule) including at least one member each from the College of Biological Sciences and from the School of Medicine. All members have voting rights, including the student representative, unless the student does not participate in the discussion due to the nature of the item (see below). The faculty members of the Executive Committee shall be elected for a three-year term, which is renewable two times. Two members shall be elected each year.

Election of faculty members of the Executive Committee: nomination shall be made either by e-mail or from the floor at the annual Spring Quarter meeting of the Group. Elections shall be conducted by mail or electronic-mail ballot within two weeks of the annual Spring Quarter meeting. At election, each member of the Group shall vote for not more than the number of positions to be filled on a ballot provided, without weighing of choice. Those receiving the most votes will be declared elected. Ties will be resolved by lot. Election results shall be communicated to the members of the Group promptly. Elected members shall assume their duties on July 1.

The principal duties of the Executive Committee shall be to determine and implement policy for the good of the Group, and to represent the interests of the Group generally to various universities and other agencies. The Executive Committee is also responsible for distribution of Block grant and work study funds.

The Chair of the Executive Committee may rule that an item of business is inappropriate for discussion in the presence of the student representative. That item of business will then be discussed in the absence of the student member of the Committee. More generally, the chair of any committee with a student member must excuse the student representatives from meetings during discussion about personnel actions or disciplinary issues relating to faculty, during rankings of existing students for funding, and for disciplinary issues related to students.

The Executive Committee shall meet at least quarterly. Additional meetings and executive sessions may be held as deemed necessary, or upon petition by five members of the Group.

The Executive Committee shall fill interim vacancies for the remainder of the current year.

Membership Committee

The Membership Committee shall consist of five members appointed by the chair of the Group for three-year terms, renewable two times. The Chair of the Membership committee is an Executive committee member appointed by the Chair of the Group. The Committee on Membership shall review on a yearly basis one-third of the membership in addition to new applicants.

Educational Policy Committee

The Educational Policy Committee shall consist of the members of the Executive Committee and two graduate advisors. The chair of the Group shall be the chair of the Committee on Educational Policy. The function of this committee shall include consideration of course offerings in biochemistry, molecular biology, cell and developmental biology and recommendations regarding the graduate program in BMB/CDB and supervision of teaching assignments and teaching experience of graduate students. The faculty members of the Educational Policy Committee will serve for a three-year term renewable two times.

Admissions Committee

The Admissions Committee shall consist of the Vice Chair of the Group, five members appointed by the chair for three-year terms, and one student appointed by the BMB/CDB Association. The Vice Chair of the Group shall be the chair of the Committee on Admissions. The functions of this committee shall include admission of students to the Group and the preparation of recommendations of their financial support. The faculty members of the Admissions Committee shall serve for a three-year term.

Student Affairs Committee

The Student Affairs Committee shall consist of the chair of the Group, four graduate advisors, and the Master Adviser who shall be the chair of the Student Affairs Committee. The term of appointment encompasses the tenure of the Chair and advisors. This committee shall be responsible for (a) analysis of the results of the placement examinations for new entering students and determination of what remedial actions may be needed, (b) the assignment of all students to research advisors, (c) the recommendation of student Master's and Ph.D. qualifying exam committees, (d) the active overview of the status of student financial support during their entire period of study, and (e) the coordination of any changes in funding which may occur.

Fellowship Committee

The Fellowship Committee shall consist of three faculty members appointed by the chair of the Group for three-year terms renewable two times. The Chair of the Fellowship Committee is an Executive Committee member appointed by the Chair of the Group. The functions of the committee include nomination and ranking of students for consideration of university fellowships and awards and identification of students to receive tuition waivers.

Recruitment Committee

The Recruitment Committee shall consist of three members appointed by the chair of the Group for three-year terms renewable two times, and two students appointed by the BMB/CDB Graduate Students' Association. The Chair of the Recruitment Committee is an Executive Committee member appointed by the Chair of the Group. The functions of the committee are to coordinate the hosting of selected applicants for visitation to the campus, to develop and administer programs for increasing the number, quality and diversity of applicants to the Group, and to generate suitable brochures and web sites to provide information to prospective applicants.

Student Mentorship Committee

The Student Mentorship Committee shall consist of three members appointed by the chair of the Group for three-year terms, renewable two times, and two students appointed by the BMB/CDB Graduate Students' Association. The Chair of the Student Mentorship Committee is an Executive Committee member appointed by the Chair of the Group. The functions of the committee are to oversee: (i) modification of Graduate Council Mentoring Guidelines (<http://gradstudies.ucdavis.edu/gradcouncil/mentoring.pdf>) to fit the specific circumstances of the Group, (ii) their adoption by the Group, and (iii) distribution and notification to the students and faculty of where the Guidelines are posted.

ARTICLE VI. STUDENT REPRESENTATIVES

Student representatives (who shall be in good standing academically) are appointed annually by the BMB/CDB Students' Association to the Executive, Admissions, Recruitment and Student Mentorship committees and have voting rights except on an item where they are excused from the discussion.

The Chair of any committee with student members must excuse the student representatives from meetings during discussion about other students, personnel actions or disciplinary issues relating to faculty, during rankings of existing students for funding, and for disciplinary issues related to students.

ARTICLE VII. GRADUATE ADVISORS

Graduate Advisers will be appointed in compliance with policies and procedures of the Graduate Council and the Office of Graduate Studies. When selecting Graduate Advisers, nominations shall be solicited from Group members. Comments on nominees shall then be sought from Group members and students. The Chair and Executive Committee will recommend nominees to be forwarded to the Office of Graduate Studies for review and appointment.

A minimum of 6 Graduate Advisers will be appointed. This will include a Master Adviser, a minimum of one adviser each specializing in one of the four tracks (Biochemistry, Molecular Genetics, Cell, Development), and one Master of Science Adviser, who will advise Master's students. The Master Adviser will oversee and coordinate advising activities and serve on the Executive Committee. Two of the advisers shall serve on the Educational Policy Committee, four advisers will serve on the Student Affairs Committee.

Graduate advisers will be appointed for a 2-year term, which is renewable for as long as the faculty is willing to serve.

ARTICLE VIII. MEETINGS

The Group Chair shall call an annual meeting during Spring quarter for the purpose of electing officers and conducting other business. The Chair shall be privileged to call other meetings in the interest of the Group and shall be required to do so at the written request of three or more members. Notification will be emailed at least two weeks before the meeting. Faculty not on campus may participate by telephone.

ARTICLE IX. QUORUM

Fifty percent of the members of the Group constitutes a quorum for the conduct of business. In the absence of a quorum, issues requiring a vote will be taken up by e-mail balloting.

All issues that require a vote must be: 1) voted on by 50+% of the available members who are eligible to vote (i.e., not on sabbatical or other approved leave), and 2) passage requires a 50+% supporting vote by those voting. Changes to the Bylaws require a two-thirds majority of those voting.

ARTICLE X. AMENDMENTS

Amendments to the By-Laws may be proposed to the Group membership by a majority of the Executive Committee, or in writing to the Group Chair by any 5 members of the Group. Amendments to the By-Laws shall be circulated to the membership by mail or e-mail and at least two-thirds of those votes, assuming a quorum as defined above, received within 10 working days of distribution shall be required for an amendment to pass. All such amendments and revisions will be submitted to Graduate Council for review and approval.

APPENDIX 7. BMCDB Degree Requirements

Graduate Group in Biochemistry, Molecular, Cellular & Developmental Biology Ph.D. and M.S.
DEGREE REQUIREMENTS

Revised: April 15, 2009

Graduate Council Approval: May 14, 2019

MASTER'S PROGRAM

1) Admissions Requirements

Applicants for admission to BMCDB must meet the University of California minimum GPA requirement for admission (3.0 overall). Other requirements for admission include:

- Hold a Bachelor's degree: An undergraduate major in biology or chemistry is typical for BMCDB graduate students, but is not required. Prerequisites include calculus; statistics; physics; general chemistry; organic chemistry; biology; biochemistry; genetics.
- English proficiency examination for international applicants who have not studied at an English speaking University: TOEFL or other University approved examination. International applicants must meet the Office of Graduate Studies minimum TOEFL score requirement (or equivalent for other University-approved examination).
- Three letters of recommendation.

a) **Prerequisites:** -None

b) **Deficiencies:** -None

2) M.S. Degree, Master's Plan I and II:

Plan I. This plan requires a minimum of 30 units of adviser-approved, graduate and upper division courses (the 100 and 200 series only) in which the student receives a letter grade (B- or better) or S, and, in addition, a thesis. At least 12 of the 30 units must be graduate work in the major field.

Plan II. This plan requires a minimum of 36 units of adviser-approved, graduate and upper division courses, of which at least 18 units must be graduate courses in the major field, and in which the student receives a letter grade (B- or better) or S. Not more than 9 units of research (299 or equivalent) may be used to satisfy the 18-unit requirement. A comprehensive final examination in the major subject is required of each candidate. No thesis is required.

3) Course Requirements - Core and Electives (see summary table)

**the following 5 courses replace the former 4 core courses (MCB 221 A, B, C, D) which were 4 units each*

a) Core Courses (15 units):

MCB 210 Molecular Genetics & Genomics (3 units)

MCB 211 Macromolecular Structure & Interactions (3 units)

MCB 212 Cell Biology (3 units)

MCB 213 Developmental Biology (3 units)

MCB 214 Molecular Biology (3 units)

Additional required courses (4 units):

MCB 215 (2 units) Directed Readings. The goal of this course is to develop critical reading skills for graduate students and to expose them to major paradigm advances in specialized fields of molecular and cellular biology. To advance active learning and participation, this course is designed to bring small groups of students together with faculty who are expert in a given area. Faculty (2/section) will choose papers that highlight major advances (technical and/or intellectual) and that form a narrative of discovery. Faculty will provide a historical background to the problem addressed by the paper, review special techniques used in the paper and challenge students to develop their own ideas for how to address the major questions in the field. The intensive meeting schedule and small group size are a critical to the goals of the course

MCB xxx (pending) (2 units; S/U grading) Research Ethics. *Modeled after GGG296.* Review of basic skills required of contemporary scientists. Topics include scientific conduct, manuscript preparation, grant writing, seminar presentations and time management. Emphasis on responsibilities of scientists to factually and thoughtfully communicate results.

b) Elective Courses (11 units Plan I; 8 units Plan II):

Each student must take at least two additional letter graded advanced undergraduate or graduate courses to be selected in consultation with the academic adviser and major professor (see attachment (b) for courses). Attention to the schedule on which such courses are offered is essential - many are offered only in alternate years

c) Summary:

A total of 30 units for Plan I and 36 units for Plan II (core, elective and research) are required. Students will enroll for 12 units per quarter including research, academic and seminar units. Courses that fulfill any of the course requirements may not be taken S/U unless the course is normally graded S/U.

Students must maintain a GPA of 3.0. If the GPA falls below 3.0, the student is placed on academic probation. If a student is on academic probation for more than three quarters, the student is subject to disqualification upon recommendation of the BMCDB Executive Committee to the Dean of Graduate Studies.

4) Special requirements:

Students who have not obtained a previous degree at an approved English-medium institution or demonstrated English-language proficiency through an appropriate exam (e.g. TOEFL) are required to complete appropriate English-language courses, as described in the policy Graduate Student Course Requirements – English as Second Language (GC2018-02). Courses taken in satisfaction of this requirement do not count towards the units required for graduation.

5) Committees:

a) **Admission Committee**

Once the completed application, all supporting material, and the application fee have been received, the application will be submitted to the Admissions Committee. The Admissions Committee consists of six graduate group faculty and one graduate group student. Based on a review of the entire application, a recommendation is made to accept or decline an applicant's request for admission. That recommendation is forwarded to the Dean of Graduate Studies for final approval of admission. Notification of admissions decisions will be sent by Graduate Studies. Applications are accepted through December 15 of the previous year for the next Fall entering class.

b) **Course Guidance/Advising/Major Professor Selection**

Upon entering the group, students will work with the Master degree adviser to ensure the students enroll in the correct courses and remedy any deficiencies. The Master degree adviser will also help place the student in a lab if research is to be undertaken (Plan I). A minimum of 12 units is required per quarter to maintain full time student status.

c) **Thesis Committee or Comprehensive Examination Committee**

The student, in consultation with his/her major professor and graduate adviser, nominate 3 faculty to serve on the Thesis (Examination) Committee. These nominations are submitted to the Office of Graduate Studies for formal appointment in accordance with Graduate Council policy (DDB 80, Graduate Council B.1.). The major professor serves as Chair of the thesis committee.

6) Advising Structure and Mentoring

The **Major Professor** is the faculty member who supervises the student's research and thesis (Plan I); this person serves as the Chair of the Thesis Committee. The **Master of Science Adviser**, who is appointed by the Chair of the group, is a resource for information on academic requirements, policies and procedures, and registration information until the Course Guidance Committee is formed. A Student Mentorship committee will deal with any mentoring problems that arise. The **Mentoring Guidelines** can be found in the graduate student handbook on the web.

7) Advancement to Candidacy

Every student must file an official application for Candidacy for the Degree of Master of Science after completing one-half of their course requirements and at least one quarter before completing all degree requirements. The Candidacy for the Degree of Master form can be found online at: <http://www.gradstudies.ucdavis.edu/forms/>. A completed form includes a list of courses the student will take to complete degree requirements. If changes must be made to the student's course plan after s/he has advanced to candidacy, the Graduate Adviser must recommend these changes to Graduate Studies. Students must have their Graduate Adviser and thesis committee Chair sign the candidacy form before it can be submitted to Graduate Studies. If the candidacy is approved, the Office of Graduate Studies will send a copy to: the Thesis Committee Chair, the appropriate graduate staff person, and the student. If the Office of Graduate Studies determines that a

student is not eligible for advancement, the department and the student will be told the reasons for the application's deferral. Some reasons for deferring an application include: grade point average below 3.0, outstanding "I" grades in required courses, or insufficient units.

8) Comprehensive Examination and Thesis Requirements

a) Thesis Requirements (Plan I)

The Master's thesis is to be carried out under the supervision of a faculty member of the BMCDB Group and must represent a contribution to knowledge in biochemistry, molecular genetics, cell biology or developmental biology. The thesis is submitted to a committee of three faculty members recommended by the Adviser and appointed in accordance with the Academic Senate regulations. The topic of the thesis should be acceptable to all members of the committee when they agree to serve and a joint meeting of committee members and the student should be held at that time. For the thesis to be acceptable for the degree, all committee members must sign the title page. Instructions on preparation of the thesis and a schedule of dates for filing the thesis in final form are available from Graduate Studies; the dates are also printed in the UC Davis General Catalog

b) Comprehensive Examination (Plan II)

The student must pass a comprehensive final examination in biochemistry, molecular genetics, cell and developmental biology. The comprehensive exam is taken after all coursework is finished, in the winter/spring of the 2nd year. The format is an oral examination administered by a committee of three faculty members nominated by the Adviser. A unanimous vote of the committee is required to pass a student. If a student does not pass the examination, the committee may recommend that she or he be re-examined one time. If the Graduate Adviser concurs, the student may be re-examined. A student who does not pass on the second attempt is subject to disqualification from further work as a graduate student. The results of all Master's examinations must be reported to Graduate Studies.

9) Normative Time to Degree

The Normative Time to Degree for the M.S. program is six quarters (two years).

10) Typical Time Line and Sequence of Events

Year 1:

Fall	Winter	Spring
MCB-211	MCB-212	MCB-214
MCB-210	MCB-213	MCB-215
MCB-291	MCB-291	MCB-291
	Advancement to candidacy in Winter or Spring	

Year 2

Fall	Winter	Spring
Elective(s)	-	-
MCB 291	<i>M.S. – Comprehensive Exam or Preparation of Thesis</i>	
MCB 299 for Thesis Plan		

11) Sources of funding

There is no guarantee of funding for the Plan I and Plan II Master programs. Master students can TA to support themselves. Faculty are NOT required to support a MS student.

12) PELP, In Absentia and Filing Fee status.

Information about PELP (Planned Educational Leave), In Absentia (reduced fees when researching out of state), and Filing Fee status can be found in the Graduate Student Guide: <http://www.gradstudies.ucdavis.edu/publications/>

Ph. D. DEGREE REQUIREMENTS

1) Admissions Requirements

Applicants for admission to BMCDB must meet the University of California minimum GPA requirement for admission (3.0 overall). Other requirements for admission include:

- Hold a Bachelor's or Master's degree: An undergraduate major or masters degree in biology or chemistry is typical for BMCDB graduate students, but is not required.
- English proficiency examination for international applicants who have not studied at an English speaking University: TOEFL or other University approved examination. International applicants must meet the Office of Graduate Studies minimum TOEFL score requirement (or equivalent for other University-approved examination).
- Three letters of recommendation

a) **Prerequisites:** - None

b) **Deficiencies:**

If there are deficiencies in background, appropriate remedial undergraduate courses will be recommended; they must be completed prior to the Qualifying exam either by

(1) taking courses as approved by the Graduate Adviser, or (2) by being a Teaching Assistant in the appropriate courses, and by attending the course lectures.

2) Dissertation Plan B

Three member (minimum) dissertation committee, an optional final oral examination (made on an individual student basis by the dissertation committee), and an exit seminar.

3) Course Requirements

**the following 5 courses replace the former 4 core courses (MCB 221 A, B, C, D) which were 4 units each*

a) **Core Courses** (15 units):

MCB 210 Molecular Genetics & Genomics (3 units)

MCB 211 Macromolecular Structure & Interactions (3 units) MCB 212 Cell Biology (3 units)

MCB 213 Developmental Biology (3 units)

MCB 214 Molecular Biology (3 units)

Additional required courses (20 units):

MCB 215 (pending) (2 units) Directed Readings. The goal of this course is to develop critical reading skills for graduate students and to expose them to major paradigm advances in specialized fields of molecular and cellular biology. To advance active learning and participation, this course is designed to bring small groups of students together with faculty who are expert in a given area. Faculty (2/section) will choose papers that highlight major advances (technical and/or

intellectual) and that form a narrative of discovery. Faculty will provide a historical background to the problem addressed by the paper, review special techniques used in the paper and challenge students to develop their own ideas for how to address the major questions in the field. The intensive meeting schedule and small group size are a critical to the goals of the course.

MCB xxx (pending) (2 units) Research Ethics. Modeled after GGG296.

Review of basic skills required of contemporary scientists. Topics include scientific conduct, manuscript preparation, grant writing, seminar presentations and time management. Emphasis on responsibilities of scientists to factually and thoughtfully communicate results.

MCB 220L – (5 units) Advanced Molecular Biology Laboratory Rotations. Taken in both the fall and winter for a total of 10 units. Two, five-week rotations per quarter. At the end of each rotation, students give short presentations on their rotation projects to other first-year students, the instructor in charge and any other faculty and students who wish to attend. In addition, each student prepares a short written report.

MCB 291 – (1 unit) Current Progress in Molecular and Cellular Biology

Seminar. Taken fall, winter and spring quarters of years 1 and 2 for a total of 6 units. Seminars presented by guest lecturers on subjects of their own research activities.

b) Elective Courses (6 units):

Each student must take at least two additional advanced courses (minimum of 6 units) to be selected in consultation with the academic adviser and major professor (see attachment (b) for courses). Attention to the schedule on which such courses are offered is essential - many are offered only in alternate years

c) Summary: Total Minimum Unit Requirement = 72 units:

A total of 72 units (core, elective, and research) are required. Students will enroll for 12 units per quarter including research, academic and seminar units. Courses that fulfill any of the course requirements may not be taken S/U unless the course is normally graded S/U. Required core and elective courses constitute 41 units, the additional 31 units is enrollment in research credit (299).

Students must maintain a GPA of 3.0. If the GPA falls below 3.0, the student is placed on academic probation. If a student is on academic probation for more than three quarters, the student is subject to disqualification upon recommendation of the BMCDB Executive Committee to the Dean of Graduate Studies.

4) Special Requirements: Teaching Assistantship (TA) requirement:

Participation in teaching is an essential part of training in the graduate program. In addition, teaching experience can be helpful later in obtaining employment. Students are required to TA one adviser-approved undergraduate biochemistry, molecular genetics, cell

biology or developmental biology lecture or laboratory course. It is expected that students fulfill this requirement during the third quarter of their first year or during the first two quarters of the second year. It must be fulfilled prior to the qualifying examination. While working as TA's students must register for MCB 390 (1 unit) or equivalent.

Teaching assignments may vary according to past teaching experience and source of support. Open positions are advertised quarterly across the campus. Application forms may be obtained from Departmental offices. In general, applications are current only for the quarters indicated on the form. New applications must be filed for subsequent consideration.

English language course requirement:

Students who have not obtained a previous degree at an approved English-medium institution or demonstrated English-language proficiency through an appropriate exam (e.g. TOEFL) are required to complete appropriate English language courses, as described in the policy Graduate Student Course Requirements – English as Second Language (GC2018-02). Courses taken in satisfaction of this requirement do not count towards the units required for graduation.

5) Committees

a) Admissions Committee

Once the completed application, all supporting material, and the application fee have been received, the application will be submitted to the Admissions Committee. The Admissions Committee consists of six graduate group faculty and one graduate group student. Based on a review of the entire application, a recommendation is made to accept or decline an applicant's request for admission. That recommendation is forwarded to the Dean of Graduate Studies for final approval of admission. Notification of admissions decisions will be sent by Graduate Studies. Applications are accepted through December 15 of the previous year for the next Fall entering class.

b) Course Guidance/Advising/Major Professor Selection

Upon entering the group, students are assigned an Academic Adviser based on their area of interest (Biochemistry, Molecular Biology, Cellular Biology, Developmental Biology). A minimum of 12 units is required per quarter to maintain full time student status. Selection of the dissertation adviser (major professor) is normally accomplished by the end of the winter quarter, first year. The chair of BMCDB sends a letter to each first year student requesting that the student find a major professor with whom the student wishes to work and who is willing to take the student into the laboratory and to provide the necessary financial support. Students submit their requests to the BMCDB Student Affairs Committee, which approves and makes final assignments. Satisfactory progress in the BMCDB program is dependent upon assignment of a dissertation adviser by the end of spring quarter in the first year.

c) Qualifying Examination Committee

Qualifying examination committees will consist of five faculty members who are recommended to Graduate Studies by the BMCDB Student Affairs Committee in the Winter quarter of the student's second year. The faculty members may all be in the

program, but will come from at least three different departments. Three members will be selected by the BMCDB Student Affairs Committee with solicited input from major advisers and students, who will be asked to recommend names of the members - ideally two of these faculty will also to serve on the student's dissertation committee. The remaining two faculty will be selected to ensure coverage of the core areas of BMCDB (i.e. Biochemistry, Molecular Biology, Cellular Biology, and Developmental Biology).

Qualifying examination committees are submitted to Graduate Studies and appointed in accordance with the Academic Senate regulations. The chair of the qualifying examination committee is expected to ensure that the student receives a fair examination. Qualifying Examination Committees may not include the major professor who will serve as chair of the student's dissertation committee. The area of the student's dissertation research will be considered so that at least one individual with expertise in this area is a member of the qualifying examination committee.

The student, in consultation with his/her major professor and graduate adviser, nominate three faculty to serve on the Examination Committee. These nominations are submitted to the Student Affairs Committee and two additional faculty are chosen from the faculty at large. These names are forwarded to the Office of Graduate Studies for formal appointment in accordance with Graduate Council policy (DDB 80. Graduate Council B.1.).

6) Mentoring

The **Major Professor** is the faculty member who supervises the student's research and dissertation; this person serves as the Chair of the Dissertation Committee. The **Graduate Adviser**, who is appointed by the Chair of the program, is a resource for information on academic requirements, policies and procedures, and registration information until the Course Guidance Committee is formed. A Student Mentorship committee will deal with any mentoring problems that arise. The **Mentoring Guidelines** can be found in the graduate student handbook on the web (the current BMCDB handbook can be found at: <https://bmcdb.ucdavis.edu/current-student-resources>)

7) Advancement to Candidacy

After the qualifying exam is passed, a student must file an application for advancement to candidacy for the degree of Doctor of Philosophy. The chair of a student's qualifying examination committee is sent the application form for advancement to candidacy.

When the student has passed the examination, the chair signs and dates the form. The student then identifies a dissertation committee, provides a dissertation title, obtains signatures of the major professor and graduate adviser, pays a fee, and files the form with Graduate Studies. Graduate Studies requires that students must be advanced to candidacy by the ninth quarter of academic enrollment to be eligible for continued appointment as a graduate student researcher or teaching assistant.

8) Preliminary Examination, Qualifying Examination and Dissertation requirements:

- a) The program requires an exit seminar of each student. Satisfaction of this requirement must be verified by the Dissertation Committee Chair.

- b) The dissertation committee may require a final oral examination; the decision is made on an individual student basis.
- c) Before advancing to candidacy for a doctoral degree, a student must have satisfied all requirements set by the graduate program, must have maintained a minimum GPA of 3.0 in all course work undertaken (except those courses graded S or U), and must have passed a Qualifying Examination before a committee appointed to administer that examination

- All students will complete the course requirements before taking their Qualifying Examination.
- The Qualifying Examination will consist of written and oral examinations.
- The written research proposal should be provided to members of the qualifying examination committee at least 1 week before the qualifying exam. The qualifying exam should be taken by the Spring quarter of the second year and no later than the end of the Fall quarter of the third year after admission to the Ph.D. program.
- According to university policy, graduate students cannot hold an academic title (e.g., Teaching Assistant, Research Assistant) for more than 9 quarters before passing their Qualifying examination.
- Passing this exam makes the student eligible for advancement to candidacy.

- d) **Written component of Qualifying Examination:** The goal of the dissertation research proposal is to provide a substantial and original contribution to the fields of biochemistry, molecular genetics, cell and/or developmental biology. The scope should be similar to that of a postdoctoral grant proposal. Written versions of the dissertation research proposal are to be prepared by the student and distributed to the committee at least one week prior to the examination. The format is that of an NIH postdoctoral fellowship proposal. Organize sections 1-5 of the research proposal to answer these questions: (1) Specific aims. What do you intend to do? (2) Background and significance. Why is the work important? (3) Preliminary studies. What have you already done? (4) Research design and methods. How are you going to do the work? (5) References. **DO NOT EXCEED 5 PAGES FOR SECTIONS 1-4.** The following distribution for length is recommended:

- (1) **Specific aims.** State briefly the broad, long-term objectives of the work. Then state the specific purposes of the proposed research. One-half page is recommended.
- (2) **Background and significance.** Briefly sketch the background to the proposal. Critically evaluate existing knowledge, and identify the gaps that the project is intended to fill. State concisely the importance of the proposed research by relating the specific aims to the broad, long-term objectives. One page is recommended.
- (3) **Preliminary studies** - dissertation research only. Describe the work you have already accomplished that is relevant to the proposal. A maximum of one page is recommended.
- (4) **Research design and methods.** Outline the experimental design and the procedures to be used to accomplish the specific aims. Include the means by which data will be collected, analyzed and interpreted. Describe any new methodology and its

advantage over existing methodologies. Discuss the potential difficulties and limitations of the proposed procedures along with alternative approaches to achieve the aims. Provide a tentative sequence for the investigation. Although no specific number of pages is recommended for this section, the total for sections 1-4 should not exceed 5 pages.

- (5) **References.** Each citation must include the names of all authors, title of the article, name of the book or journal, volume number, page numbers and year of publication.

Concepts within the research proposal can be discussed with others (such as the student's major professor and peers), but the writing of the proposal should be solely the student's work (i.e., no editorial assistance is allowed) as the proposal will serve as evidence of the student's proficiency in scientific writing.

The qualifying exam committee will be responsible for assessing that the student's writing proficiency is satisfactory before advancement to candidacy. Furthermore, the research proposal will provide information that may be discussed during the oral exam.

- e) Oral component of the Qualifying Examination:

The oral portion of the qualifying exam is intended to demonstrate the student's critical thinking ability, synthesis, and broad knowledge of the field of study. It will start with ~ 20 min oral chalkboard presentation of the proposal; questions will be asked related to the research topic and then proceed to more general topics. The committee will evaluate the student's general qualifications for a respected position as an educator or leader as well as the student's preparation in a special area of study based upon relevant portions of the student's previous academic record, performance on specific parts of the examination, and the student's potential for scholarly research as indicated during the examination.

- f) Qualifying Examination Evaluations

There are three possible outcomes of the examinations - pass, not pass, and fail. Pass advances the student to candidacy for the Ph.D. Fail means that the student is disqualified. Not pass means that the student is required to retake all or part of the examination OR to satisfy another requirement. If requested, the second examination is to be scheduled at the earliest possible date and will be administered by the same committee. Satisfactory completion of this examination (or completion of the new requirement) will result in Advancement to Candidacy. Failure will result in a recommendation for disqualification. Note: To officially advance to candidacy, a fee must be paid to the Cashiers Office and the fully endorsed Advanced to Candidacy Petition can then be submitted to Graduate Studies.

9) Normative Time to Degree

A minimum of three years is required for the Ph.D. but ordinarily a student should plan on four to five years to satisfy all requirements of the degree. Normative time, measured from the time a student begins graduate study at any level at UCD, is 5 years for the current

groups.

10) Typical Time Line and Sequence of Events

Year 1:

<i>Fall</i>	<i>Winter</i>	<i>Spring</i>
MCB 211 (3u)	MCB 212 (3u)	MCB 214 (3u)
MCB 210 (3u)	MCB 213 (3u)	MCB 215 (2u)
MCB 220L (5u)	MCB 220L (5u)	Elective
MCB 291 (1u)	MCB 291 (1u)	MCB 299
		MCB 291 (1u)

Year 2:

Fall	Winter	Spring
Elective	TA	MCB 299
Research Ethics	MCB 299	MCB 291 (1u)
MCB 299	MCB 291 (1u)	QE
MCB 291 (1u)	Advancement to Candidacy	

Year 3-5: MCB 299 (recommended)

Completion of Dissertation

11) Sources of funding

Students are supported through block grant funds and/or fellowships for the first two quarters. Once a student has joined a lab, the Major Professor is responsible for supporting the student. This can be through GSR, TA or a combination of the above.

12) PELP, In Absentia and Filing Fee status.

Information about PELP (Planned Educational Leave), In Absentia (reduced fees when researching out of state), and Filing Fee status can be found in the Graduate Student Guide: http://gradstudies.ucdavis.edu/students/handbook/GS201_GraduateStudentGuide.pdf.

13) Leaving the Program Prior to Completion of the PhD Requirements.

Should a student leave the program prior to completing the requirements for the PhD, they may still be eligible to receive the Masters if they have fulfilled all the requirements (see Master's section). Students can use the Change of Degree Objective form available from the Registrar's Office: http://registrar.ucdavis.edu/local_resources/forms/D065-graduate-major-degree-change.pdf

MASTER'S PROGRAM

1) Admissions Requirements

Applicants for admission to BMCDB must meet the University of California minimum GPA requirement for admission (3.0 overall). Other requirements for admission include:

- Hold a Bachelor's degree: An undergraduate major in biology or chemistry is typical for BMCDB graduate students, but is not required. Prerequisites include calculus; statistics; physics; general chemistry; organic chemistry; biology; biochemistry; genetics.
- Graduate Record Examination (General Test)
- English proficiency examination for international applicants who have not studied at an English speaking University: TOEFL or other University approved examination. International applicants must meet the Office of Graduate Studies minimum TOEFL score requirement (or equivalent for other University-approved examination).
- Three letters of recommendation.

2) M.S. Degree, Master's Plan I and II:

Plan I. This plan requires a minimum of 30 units of adviser-approved, graduate and upper division courses (the 100 and 200 series only) in which the student receives a letter grade (B- or better) or S, and, in addition, a thesis. At least 12 of the 30 units must be graduate work in the major field.

Plan II. This plan requires a minimum of 36 units of adviser-approved, graduate and upper division courses, of which at least 18 units must be graduate courses in the major field, and in which the student receives a letter grade (B- or better) or S. Not more than 9 units of research (299 or equivalent) may be used to satisfy the 18-unit requirement. A comprehensive final examination in the major subject is required of each candidate. No thesis is required.

3) Course Requirements - Core and Electives (see summary table)

**the following 5 courses replace the former 4 core courses (MCB 221 A, B, C, D) which were 4 units each*

a) Core Courses (15 units):

MCB 210 Molecular Genetics & Genomics (3 units)

MCB 211 Macromolecular Structure & Interactions (3 units)

MCB 212 Cell Biology (3 units)

MCB 213 Developmental Biology (3 units)

MCB 214 Molecular Biology (3 units)

Additional required courses (4 units):

MCB 215 (2 units) Graduate Reading Course. The goal of this course is to develop critical reading skills for graduate students and to expose them to major paradigm advances in specialized fields of molecular and cellular biology. To advance active learning and participation, this course is designed to bring small groups of students together with faculty who are expert in a given area. Faculty (2/section) will choose papers that highlight major advances (technical and/or intellectual) and that form a narrative of discovery. Faculty will provide a historical background to the problem addressed by the paper, review special techniques used in the paper and challenge students to develop their own ideas for how to

address the major questions in the field. The intensive meeting schedule and small group size are a critical to the goals of the course.

MCB xxx (pending) (2 units; S/U grading) Research Ethics. *Modeled after GGG296.* Review of basic skills required of contemporary scientists. Topics include scientific conduct, manuscript preparation, grant writing, seminar presentations and time management. Emphasis on responsibilities of scientists to factually and thoughtfully communicate results.

b) Elective Courses (11 units Plan I; 8 units Plan II):

Each student must take at least two additional letter graded advanced undergraduate or graduate courses to be selected in consultation with the academic adviser and major professor (see attachment (b) for courses). Attention to the schedule on which such courses are offered is essential - many are offered only in alternate years

c) Total Minimum Unit Requirement:

A total of 30 units for Plan I and 36 units for Plan II (core, elective and research) are required. Students will enroll for 12 units per quarter including research, academic and seminar units. Courses that fulfill any of the course requirements may not be taken S/U unless the course is normally graded S/U.

Students must maintain a GPA of 3.0. If the GPA falls below 3.0, the student is placed on academic probation. If a student is on academic probation for more than three quarters, the student is subject to disqualification upon recommendation of the BMCDB Executive Committee to the Dean of Graduate Studies.

4) **Special requirements** – none

5) **Committees:**

a) **Admission Committee**

Once the completed application, all supporting material, and the application fee have been received, the application will be submitted to the Admissions Committee. The Admissions Committee consists of six graduate group faculty and one graduate group student. Based on a review of the entire application, a recommendation is made to accept or decline an applicant's request for admission. That recommendation is forwarded to the Dean of Graduate Studies for final approval of admission. Notification of admissions decisions will be sent by Graduate Studies. Applications are accepted through December 15 of the previous year for the next Fall entering class.

b) **Course Guidance/Advising/Major Professor Selection**

Upon entering the group, students will work with the Master degree adviser to ensure the students enroll in the correct courses and remedy any deficiencies. The Master degree adviser will also help place the student in a lab if research is to be undertaken (Plan I). A minimum of 12 units is required per quarter to maintain full time student status.

c) **Thesis Committee or Comprehensive Examination Committee**

The student, in consultation with his/her major professor and graduate adviser, nominate 3 faculty to serve on the Thesis (Examination) Committee. These nominations are submitted to the Office of Graduate Studies for formal appointment in accordance with Graduate Council policy (DDB 80, Graduate Council B.1.). The major professor serves as Chair of the thesis committee.

6) Advising Structure and Mentoring

The **Major Professor** is the faculty member who supervises the student's research and thesis (Plan I); this person serves as the Chair of the Thesis Committee. The **Master of Science Adviser**, who is appointed by the Chair of the group, is a resource for information on academic requirements, policies and procedures, and registration information until the Course Guidance Committee is formed. A Student Mentorship committee will deal with any mentoring problems that arise. The **Mentoring Guidelines** can be found in the graduate student handbook on the web (the current BMCDB handbook can be found at: <https://bmcdb.ucdavis.edu/current-student-resources>).

7) Advancement to Candidacy

Every student must file an official application for Candidacy for the Degree of Master of Science after completing one-half of their course requirements and at least one quarter before completing all degree requirements. The Candidacy for the Degree of Master form can be found online at: <http://www.gradstudies.ucdavis.edu/forms/>. A completed form includes a list of courses the student will take to complete degree requirements. If changes must be made to the student's course plan after s/he has advanced to candidacy, the Graduate Adviser must recommend these changes to Graduate Studies. Students must have their Graduate Adviser and thesis committee Chair sign the candidacy form before it can be submitted to Graduate Studies. If the candidacy is approved, the Office of Graduate Studies will send a copy to: the Thesis Committee Chair, the appropriate graduate staff person, and the student. If the Office of Graduate Studies determines that a student is not eligible for advancement, the department and the student will be told the reasons for the application's deferral. Some reasons for deferring an application include: grade point average below 3.0, outstanding "I" grades in required courses, or insufficient units.

8) Comprehensive Examination and Thesis Requirements

a) **Thesis Requirements (Plan I)**

The Master's thesis is to be carried out under the supervision of a faculty member of the BMCDB Group and must represent a contribution to knowledge in biochemistry, molecular genetics, cell biology or developmental biology. The thesis is submitted to a committee of three faculty members recommended by the Adviser and appointed in accordance with the Academic Senate regulations. The topic of the thesis should be acceptable to all members of the committee when they agree to serve and a joint meeting of committee members and the student should be held at that time. For the thesis to be acceptable for the degree, all committee members must sign the title page. Instructions on preparation of the thesis and a schedule of dates for filing the thesis in final form are available from Graduate Studies; the dates are also printed in the UC Davis General Catalog

b) **Comprehensive Examination (Plan II)**

The student must pass a comprehensive final examination in biochemistry, molecular genetics, cell and developmental biology. The comprehensive exam is taken after all coursework is finished, in the winter/spring of the 2nd year. The format is an oral examination administered by a committee of three faculty members nominated by the Adviser. A unanimous vote of the committee is required to pass a student. If a student does not pass the examination, the committee may recommend that she or he be re-examined one time. If the Graduate Adviser concurs, the student may be re-examined. A student who does not pass on the second attempt is subject to disqualification from further work as a graduate student. The results of all Master's examinations must be reported to Graduate Studies.

9) Normative Time to Degree

The Normative Time to Degree for the M.S. program is six quarters (two years).

10) Typical Time Line and Sequence of Events

Year 1:

<i>Fall</i>	<i>Winter</i>	<i>Spring</i>
MCB210	MCB212	MCB214
MCB211	MCB213	MCB215
MCB291	MCB291	MCB291
	Advancement to candidacy in Winter or Spring	

Year 2:

<i>Fall</i>	<i>Winter</i>	<i>Spring</i>
Elective(s)		
Ethics		
MCB291	<i>M.S. Comprehensive Exam or preparation of thesis</i>	
BCB299 for Thesis Plan I		

11) Sources of funding

There is no guarantee of funding for the Plan I and Plan II Master Programs. Master students can TA to support themselves. Faculty are NOT required to support an MS student.

12) PELP and Filing Fee status.

Information about PELP (Planned Educational Leave) and Filing Fee status can be found in the Graduate Student Handbook:

http://gradstudies.ucdavis.edu/students/handbook/GS201_GraduateStudentGuide.pdf

Ph.D. PROGRAM

1) Admissions Requirements

Applicants for admission to BMCDB must meet the University of California minimum GPA requirement for admission (3.0 overall). Other requirements for admission include:

- Hold a Bachelor's or Master's degree: An undergraduate major or masters degree in biology or chemistry is typical for BMCDB graduate students, but is not required.
- Graduate Record Examination (General Test) is required; Subject test in Biochemistry, Biology or Chemistry is recommended but not required.
- English proficiency examination for international applicants who have not studied at an English speaking University: TOEFL or other University approved examination. International applicants must meet the Office of Graduate Studies minimum TOEFL score requirement (or equivalent for other University-approved examination).
- Three letters of recommendation

Deficiencies:

If there are deficiencies in background, appropriate remedial undergraduate courses will be recommended; they must be completed prior to the Qualifying exam either by (1) taking courses as approved by the Graduate Adviser, or (2) by being a Teaching Assistant in the appropriate courses, and by attending the course lectures.

2) Dissertation (Plan B under Grad Studies definitions)

Three member (minimum) dissertation committee, an optional final oral examination (made on an individual student basis by the dissertation committee), and an exit seminar.

3) Course Requirements

**the following 5 courses replace the former 4 core courses (MCB 221 A, B, C, D) which were 4 units each*

a) Core Courses (must earn B- or better):

- MCB 210 Molecular Genetics & Genomics (3 units)
- MCB 211 Macromolecular Structure & Interactions (3 units)
- MCB 212 Cell Biology (3 units)
- MCB 213 Developmental Biology (3 units)
- MCB 214 Molecular Biology (3 units)

Additional required courses (21 units):

MCB 215 (2 units) Graduate Reading Course. The goal of this course is to develop critical reading skills for graduate students and to expose them to major paradigm advances in specialized fields of molecular and cellular biology. To advance active learning and participation, this course is designed to bring small groups of students together with faculty who are expert in a given area. Faculty (2/section) will choose papers that highlight major advances (technical and/or intellectual) and that form a narrative of discovery. Faculty will provide a historical background to the problem addressed by the paper, review special techniques used in the paper and challenge students to develop their own ideas for how to address the major questions in the field. The intensive meeting schedule and small group size are a critical to the goals of the course.

MCB xxx (pending) (2 units) Research Ethics. Modeled after GGG296. Review of basic skills required of contemporary scientists. Topics include scientific conduct, manuscript preparation, grant writing, seminar presentations and time management. Emphasis on responsibilities of scientists to factually and thoughtfully communicate results.

MCB 220L (10 units) Advanced Molecular Biology Laboratory Rotations. Taken in both the fall and winter for a total of 10 units. Two, five-week rotations per quarter. At the end of each rotation, students give short presentations on their rotation projects to other first-year students, the instructor in charge and any other faculty and students who wish to attend. In addition, each student prepares a short written report.

MCB 291 (1 unit) Current Progress in Molecular and Cellular Biology Seminar. Taken fall, winter and spring quarters of years 1 and 2 for a total of 6 units. Seminars presented by guest lecturers on subjects of their own research activities.

BCB 290 (1 unit) Current Progress in Molecular and Cellular Biology Seminar. Taken fall quarter of year 2 for 1 unit.

b) Elective Courses (6 units):

Each student must take at least two additional advanced courses (minimum of 6 units) to be selected in consultation with the academic adviser and major professor (see attachment (b) for courses). Attention to the schedule on which such courses are offered is essential - many are offered only in alternate years

c) Total Minimum Unit Requirement = 72 units:

A total of 72 units (core, elective, and research) are required. Students will enroll for 12 units per quarter including research, academic and seminar units. Courses that fulfill any of the course requirements may not be taken S/U unless the course is normally graded S/U. Required core and elective courses constitute 41 units, the additional 31 units is enrollment in research credit (299).

Students must maintain a GPA of 3.0. If the GPA falls below 3.0, the student is placed on academic probation. If a student is on academic probation for more than three quarters, the student is subject to disqualification upon recommendation of the BMCDB Executive Committee to the Dean of Graduate Studies.

4) Teaching Assistantship (TA) requirement:

Participation in teaching is an essential part of training in the graduate program. In addition, teaching experience can be helpful later in obtaining employment. Students are required to TA one adviser-approved undergraduate biochemistry, molecular genetics, cell biology or developmental biology lecture or laboratory course. It is expected that students fulfill this requirement during the third quarter of their first year or during the first two quarters of the second year. It must be fulfilled prior to the qualifying examination. While working as TA's students must register for MCB 390 (1 unit) or equivalent.

Teaching assignments may vary according to past teaching experience and source of support. Open positions are advertised quarterly across the campus. Application forms may be obtained from Departmental offices. In general, applications are current only for the quarters indicated on the form. New applications must be filed for subsequent consideration.

An exception to the requirement to complete a TAsip prior to the student's QE will be allowed for students supported by a fellowship that prohibits 'work' outside of research (e.g. NSF). In such cases, students will fulfill their TA requirement following completion of their fellowship support and in consultation with their academic and thesis advisors.

5) **Committees**

a) **Admissions Committee**

Once the completed application, all supporting material, and the application fee have been received, the application will be submitted to the Admissions Committee. The Admissions Committee consists of six graduate group faculty and three graduate group students. Based on a review of the entire application, a recommendation is made to accept or decline an applicant's request for admission. That recommendation is forwarded to the Dean of Graduate Studies for final approval of admission. Notification of admissions decisions will be sent by Graduate Studies. Applications are accepted through December 15 of the previous year for the next Fall entering class.

b) **Course Guidance/Advising/Major Professor Selection**

Upon entering the group, students are assigned an Academic Adviser based on their area of interest (Biochemistry, Molecular Biology, Cellular Biology, Developmental Biology). A minimum of 12 units is required per quarter to maintain full time student status. Selection of the dissertation adviser (major professor) is normally accomplished by the end of the winter quarter, first year. The chair of BMCDB sends a letter to each first year student requesting that the student find a major professor with whom the student wishes to work and who is willing to take the student into the laboratory and to provide the necessary financial support. Students submit their requests to the BMCDB Student Affairs Committee, which approves and makes final assignments. Satisfactory progress in the BMCDB program is dependent upon assignment of a dissertation adviser by the end of spring quarter in the first year.

c) **Qualifying Examination Committee**

Qualifying examination committees will consist of five faculty members who are recommended to Graduate Studies by the BMCDB Student Affairs Committee in the Winter quarter of the student's second year. The faculty members may all be in the program, but will come from at least three different departments. Three members will be selected by the BMCDB Student Affairs Committee with solicited input from major committee well in advance of when completion is expected. We recommend that students provide their committee with an outline of the thesis at least 6 months prior to the expected completion date that was noted on the last progress report.

Before advancing to candidacy for a doctoral degree, a student must have satisfied all requirements set by the graduate program, must have maintained a minimum GPA of 3.0 in

all course work undertaken (except those courses graded S or U), and must have passed a Qualifying Examination before a committee appointed to administer that examination.

- All students will complete the course requirements before taking their Qualifying Examination.
- The Qualifying Examination will consist of written and oral examinations.
- The written research proposal should be provided to members of the qualifying examination committee at least 1 week before the qualifying exam. The qualifying exam should be taken by the Spring quarter of the second year and no later than the end of the Fall quarter of the third year after admission to the Ph.D. program.
- According to university policy, graduate students cannot hold an academic title (e.g., Teaching Assistant, Research Assistant) for more than 9 quarters before passing their Qualifying examination.
- Passing this exam makes the student eligible for advancement to candidacy.

d) Written component of Qualifying Examination:

The goal of the dissertation research proposal is to provide a substantial and original contribution to the fields of biochemistry, molecular genetics, cell and/or developmental biology. The scope should be similar to that of a postdoctoral grant proposal. Written versions of the dissertation research proposal are to be prepared by the student and distributed to the committee at least one week prior to the examination. The format is that of an NIH postdoctoral fellowship proposal. Organize sections 1-5 of the research proposal to answer these questions: (1) Specific aims. What do you intend to do? (2) Background and significance. Why is the work important? (3) Preliminary studies. What have you already done? (4) Research design and methods. How are you going to do the work? (5) References. **DO NOT EXCEED 5 PAGES FOR SECTIONS 1-4.** The following distribution for length is recommended:

(1) **Specific aims.** State briefly the broad, long-term objectives of the work. Then state the specific purposes of the proposed research. One-half page is recommended.

(2) **Background and significance.** Briefly sketch the background to the proposal. Critically evaluate existing knowledge, and identify the gaps that the project is intended to fill. State concisely the importance of the proposed research by relating the specific aims to the broad, long-term objectives. One page is recommended.

(3) **Preliminary studies** - dissertation research only. Describe the work you have already accomplished that is relevant to the proposal. A maximum of one page is recommended.

(4) **Research design and methods.** Outline the experimental design and the procedures to be used to accomplish the specific aims. Include the means by which data will be collected, analyzed and interpreted. Describe any new methodology and its advantage over existing methodologies. Discuss the potential difficulties and limitations of the proposed procedures along with alternative approaches to achieve the aims. Provide a tentative sequence for the investigation. Although no specific number of pages is recommended for this section, the total for sections 1-4 should not exceed 5 pages.

(5) **References.** Each citation must include the names of all authors, title of the article, name of the book or journal, volume number, page numbers and year of publication.

Concepts within the research proposal can be discussed with others (such as the student's major professor and peers), but the writing of the proposal should be solely the student's work (i.e., no editorial assistance is allowed) as the proposal will serve as evidence of the student's proficiency in scientific writing.

The qualifying exam committee will be responsible for assessing that the student's writing proficiency is satisfactory before advancement to candidacy. Furthermore, the research proposal will provide information that may be discussed during the oral exam.

e) Oral component of the Qualifying Examination:

The oral portion of the qualifying exam is intended to demonstrate the student's critical thinking ability, synthesis, and broad knowledge of the field of study. It will start with ~ 20 min oral chalkboard presentation of the proposal; questions will be asked related to the research topic and then proceed to more general topics.

The committee will evaluate the student's general qualifications for a respected position as an educator or leader as well as the student's preparation in a special area of study based upon relevant portions of the student's previous academic record, performance on specific parts of the examination, and the student's potential for scholarly research as indicated during the examination.

f) Qualifying Examination Evaluations

There are three possible outcomes of the examinations - pass, not pass, and fail. Pass advances the student to candidacy for the Ph.D. Fail means that the student is disqualified. Not pass means that the student is required to retake all or part of the examination OR to satisfy another requirement. If requested, the second examination is to be scheduled at the earliest possible date and will be administered by the same committee. Satisfactory completion of this examination (or completion of the new requirement) will result in Advancement to Candidacy. Failure will result in a recommendation for disqualification. Note: To officially advance to candidacy, a fee must be paid to the Cashiers Office and the fully endorsed Advanced to Candidacy Petition can then be submitted to Graduate Studies.

9) Normative Time to Degree

A minimum of three years is required for the Ph.D. but ordinarily a student should plan on four to five years to satisfy all requirements of the degree. Normative time, measured from the time a student begins graduate study at any level at UCD, is 5 years for the current groups.

10) Typical Time Line and Sequence of Events

Year 1:

<i>Fall</i>	<i>Winter</i>	<i>Spring</i>
MCB210 (3u)	MCB212 (3u)	MCB214 (3u)
MCB211 (3u)	MCB213 (3u)	MCB215 (2u)
MCB220L (5u)	MCB220L (5u)	Elective
MCB291 (1u)	MCB291 (1u)	BCB299
		MCB291 (1u)

Year 2:

<i>Fall</i>	<i>Winter</i>	<i>Spring</i>
Elective	TA	BCB299
Research Ethics	BCB299	MCB291 (1u)
BCB299	MCB291 (1u)	QE
MCB291 (1u)		Advancement to Candidacy
BCB290 (1u)		

**Year 3-5: BCB299
 Completion of Dissertation**

11) Sources of funding

Students are supported through block grant funds and/or fellowships for the first two quarters. Once a student has joined a lab, the Major Professor is responsible for supporting the student. This can be through GSR, TA or a combination of the above.

12) PELP and Filing Fee status.

Information about PELP (Planned Educational Leave) and Filing Fee status can be found in the Graduate Student Handbook:

http://gradstudies.ucdavis.edu/students/handbook/GS201_GraduateStudentGuide.pdf