JULIE BOSSUYT, PROGRAM CHAIR
Molecular, Cellular and Integrative Physiology

RE: Molecular, Cellular and Integrative Physiology Degree Requirements

Enclosed is a copy of the Molecular, Cellular and Integrative Physiology graduate degree requirements as approved by Graduate Council on March 8, 2018. These degree requirements are now the official requirements for the Molecular, Cellular and Integrative Physiology Graduate Program and will be posted on the Office of Graduate Studies program webpage:

https://grad.ucdavis.edu/programs/gmcp

Thank you for your efforts on behalf of graduate education.

Sincerely,

Carlee Arnett, Chair
Graduate Council

CC: Amanda Kimball, Graduate Studies Analyst
    Nicole Rabaud, Graduate Program Coordinator
Master’s Degree Requirements:

1) **Admissions requirements**: Consideration for program admission requires a bachelor’s degree, three letters of recommendation, official transcripts, GRE General Test scores, TOEFL or IELTS score (if applicable) and an Office of Graduate Studies online application with fee by the stated admission deadline. A minimum GPA of 3.0 is required. However, admissions decisions are made on a case-by-case basis. Meeting some or all of these criteria does not guarantee admission, but merely eligibility. The decision to recommend admission to the Dean of Graduate Studies will be made by the Program Admissions Committee on the basis of available space and the competitiveness of applicants compared to the eligible pool.

   a) **Prerequisites**: In addition to the admission requirements stated above, applicants are expected to have passed the equivalent of the following UC Davis courses:

   **Physics**: One year of General Physics with laboratory or equivalent content, e.g. PHY 7A, 7B, 7C.

   **Chemistry**:
   - General Chemistry: One year of General Chemistry with laboratory or equivalent content, e.g. Chemistry 2A, 2B, and 2C.
   - Organic Chemistry: Two quarters of Organic Chemistry with laboratory or equivalent, e.g. Chemistry 8A and 8B.
   - Introductory Biochemistry: Two quarters of Biochemistry or equivalent content, e.g., BIS 102 and 103.
   - Biochemistry or Cell Biology laboratory: One quarter of Biochemistry or cell biology laboratory or equivalent content, e.g., MCB 120L or NPB 104L

   **Mathematics**: One year of Analytical geometry and calculus or equivalent content, e.g. Math 16A, 16B, 16C

   **Statistics**: One course in Introduction to Statistics or equivalent content, e.g., Statistics 13

   **Biology**: One year of General Biology or equivalent content, e.g. BIS 1A, 1B, and 1C.
b) **Deficiencies**: Students requiring more than two courses to remedy deficiencies in the above requirements will not normally be admitted. Course work deficiencies should be made up by the end of the first academic year following initial enrollment by earning a letter grade of “B” or better. Courses cannot be taken S/U unless the courses are approved as exceptions by graduate council (http://gradstudies.ucdavis.edu/gradcouncil/su.pdf)

2) **M.S., Master’s Plan I and II**: The M.S. degree is awarded under Plan I (thesis option) as well as Plan II (comprehensive exam option). The requirements for these two options are as follows:

**Plan I.** This plan requires a minimum of 30 units of graduate and upper division courses (the 100 and 200 series only) and, in addition, a thesis or a project in lieu of a thesis. At least 12 of the 30 units must be graduate work in the major field. There is no comprehensive exam.

**Plan II.** This plan requires a minimum of 36 units of graduate and upper division courses, of which at least 18 units must be graduate courses in the major field. 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**: The Office of Graduate Studies requires that every full time student register for 12 units each quarter. This requirement can be met by a combination of courses included on the student’s program of study (please see the list below) and 299’s.

**M.S., Plan I** (minimum 30 units):

MCP 210A, MCP 210B, MCP 210C, MCP 298
6 units (max) 290/296/299 courses
9 units of cellular or systemic physiology courses (upper division or graduate)
Thesis

a) **Core Courses**:
- MCP 210A, Advanced Physiology, 5 units
- MCP 210B, Advanced Physiology, 6 units
- MCP 210C, Advanced Physiology, 5 units
- MCP 298 – Companion discussion, 6 units total

b) **Elective Courses**: All units must be selected in consultation with the Graduate Adviser from the course listing for either the Cellular or System Physiology subspecialty. The balance of the 30 units are to be selected from upper division or graduate courses in physiology or closely related subjects. No more than six of the
30 units can be credited from 290-level courses [i.e., 290/298(group study), 299 (research), or GGG 296].

c) **English Language Requirement** Students who have not obtained an undergraduate or graduate degree at an approved English-medium institution, or who have not demonstrated strong English language proficiency through the TOEFL or IELTS exam are required to take appropriate English language courses, as described in Graduate Student Course Requirements – English as Second Language (GC-2018-02). Courses taken in satisfaction of this requirement do not count towards the total units required for graduation.

d) **Summary**: A minimum total of 30 units are required. A minimum course load is 12 units each academic quarter.

**M.S., Plan II** (minimum 36 units):

MCP 210A, MCP 210B, MCP 210C, MCP 298  
6 units (max) 290/296/299 courses  
3 units graduate physiology courses  
12 units of upper division or graduate physiology courses  
Comprehensive physiology exam  
This is a terminal degree

a) **Core Courses:**  
MCP 210A, Advanced Physiology, 4 units  
MCP 210B, Advanced Physiology, 6 units  
MCP 210C, Advanced Physiology, 5 units  
MCP 298 – Companion discussion, 6 units total

b) **Elective Courses:** No more than six of the 36 units can be credited from 290-level courses [i.e., 290/298 (group study), or 299 (research) or GGG 296]. All units must be selected in consultation with the Graduate Adviser

c) **Summary**: A minimum total of 36 units are required. A minimum course load is 12 units each academic quarter.

4) **Special requirements**: Students in the core course must receive a grade of B- or better to satisfy the core course requirements, although a cumulative GPA of 3.0 or greater is required for graduation. See section 8 for comprehensive exam and thesis requirements.

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 four graduate group
faculty and one 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 January 5 for the Fall entering class.

b) **Course Guidance or Advising Committee**: Students will be assigned a Graduate Adviser who will help plan an appropriate program of instruction. The adviser is also available for general counsel and guidance concerning the Molecular, Cellular and Integrative Physiology Graduate Group and University requirements for the designated degree and will interpret the rules and policies of Graduate Studies and the Molecular, Cellular and Integrative Physiology Graduate Group as they apply to the student’s specific area. There is a minimum 12 unit requirement per quarter rule for full time students. These 12 units can be made up of required courses and 299s.

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

**Thesis Committee**: For those students who choose Plan I, the research program and thesis must be completed under the direct guidance of a major professor who is a member of the Molecular, Cellular and Integrative Physiology Graduate Group, chosen in consultation with the Graduate Adviser. At least two other faculty members assist the major professor as members of the thesis committee. The two additional faculty members are chosen by the student in consultation with the major professor and Graduate Advisor. The Graduate Advisor submits committee nominations to the Office of Graduate Studies for formal appointment in accordance with Graduate Council policy. The major professor serves as Chair of the committee.

**Comprehensive Exam Committee**: This examination shall be administered by a three faculty member committee appointed by the Committee on Educational Policy (students, through their Graduate Adviser, can submit to the Committee on Educational Policy a list of faculty whom they would suggest to be on this committee). At least two members must be in the Molecular, Cellular and Integrative Physiology Graduate Group, and at least one must be in the student’s area of specialization (i.e., Cellular Physiology or Systemic Physiology). These nominations are reviewed by the Committee on Educational Policy and submitted to the Office of Graduate Studies for formal appointment in accordance with Graduate Council policy. There are three possible outcomes of the examination - pass, not pass, and fail. Pass qualifies the student to receive the M.S. degree. Fail means that the student is recommended for disqualification to the Dean of Graduate Studies. 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 an M.S. degree. Failure will result in recommendation for disqualification.
6) **Advising Structure and Mentoring:** The **Major Professor** is the faculty member who supervises the student’s research and thesis; this person serves as the Chair of the Thesis Committee. The **Graduate Adviser**, who is nominated by the Chair of the program and appointed by the Dean of Graduate Studies, is a resource for information on academic requirements, policies and procedures, and registration information. The **Graduate Program Coordinator** (staff) assists students with identifying a major professor, identifying appointments, and general university policies. The **Mentoring Guidelines** can be found at [http://www.gradstudies.ucdavis.edu/gradcouncil/mentoring.pdf](http://www.gradstudies.ucdavis.edu/gradcouncil/mentoring.pdf).

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; this is typically in the spring quarter of the first year. The Candidacy for the Degree of Master form can be found online at: [http://www.gradstudies.ucdavis.edu/forms/](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):**

   **Thesis committee meetings:** The candidate and major professor should meet at least once a year with the other members of the thesis committee to discuss progress and any changes in research objectives.

   **Thesis:** The research program and thesis must be completed under the direct guidance of a major professor who is a member of the Molecular, Cellular and Integrative Physiology Graduate Group (see section 5c for composition of thesis committee).

   A written outline of the research project shall be submitted to the thesis committee. This outline will include critical evaluation of the methods and their limitations plus a full description of experimental design, protocols, and data analysis. Should the committee determine that the thesis is unacceptable, a recommendation to disqualify the student will be made to the Dean of Graduate Studies.

   The M.S. thesis in MCIP should be:
• A scholarly piece of experimental research
• Rigorous in approach (design, methodology, and analysis), but not as extensive as a Ph.D. dissertation.

b) **Comprehensive Examination (Plan II):** The M.S. comprehensive examination shall:

- Be oral;
- Determine the general knowledge and understanding that the candidate possesses in both cellular and systemic physiology, such that the candidate is judged competent to teach introductory physiology courses;
- The M.S. degree Plan II is considered a terminal graduate degree in MCIP at U.C. Davis.

The Master's Comprehensive Examination is conducted by a committee of at least three members nominated by the student’s Graduate Advisor and appointed by the Committee on Educational Policy. The exam is similar to the Ph.D. qualifying exam but without the research proposal. The student will be tested on the physiological concepts taught in the 210 series and be competent to teach basic physiology at the junior college level. If the student does not pass, the Committee may recommend, with the concurrence of the Graduate Academic Advisor, the student to be reexamined one time. Changes in the composition of the Committee may be made only for reasons of clear necessity, e.g. the extended absence of a member from the campus. If the student does not pass on the second attempt, the student is subject to disqualification from further work as a graduate student.

The result of all Master's comprehensive examinations must be reported to Graduate Studies. The Graduate Advisor will report to the Dean that the student has completed all requirements for the degree, with the date of the examination, or that the student has deferred or failed. The reporting date usually coincides with the last day of the quarter. An affirmative response and the Graduate Advisor’s signature certify that the student has completed all program requirements for the degree. The student’s name will appear on the current degree list if the student has satisfied the minimum Graduate Studies requirements. In order to take the comprehensive exam, the student must either be enrolled or on filing fee.

i) **Timing -** Students may take the comprehensive examination once they have advanced to candidacy. This capstone requirement should be completed at or near the end of the coursework for the Master’s degree.

ii) **Outcome -** If a student does not pass the exam on the first attempt, the committee may recommend that the student be reexamined one more time, but only if the Graduate Adviser concurs with the committee. The examination may not be repeated more than once. The timing and format of a second exam if a student must retake the exam after failing part or the entire first exam will be determined by examining committee. Graduate Studies requires the Exam
committee’s unanimous vote to pass a student on the exam. A student who
does not pass on the second attempt will be recommended for disqualification
from further graduate work in the program to the Dean of Graduate Studies.

The results of all examinations must be reported to Graduate Studies using the Master’s
Report Form (http://www.gradstudies.ucdavis.edu/forms/). Please note that when students
take the exam, they must be registered or in current filing fee status.

9) **Normative Time To Degree:** Normative time to advancement to candidacy is one year
and two years for normative time to degree (i.e., time in candidacy is one year).

10) **Typical Time Line and Sequence of Events:**

First Year, Fall Quarter
- MCP 210A – core course part 1 (4 units) “Cellular” Physiology
- Companion Discussion courses to MCP 210A (2 units)
- GGG 296 – Scientific Integrity (2 unit)
- Optional Adviser approved elective courses

First Year, Winter Quarter
- MCP 210B – core course part 2 (6 units) “Systemic” Physiology
- Companion Discussion courses to MCP 210B (2 units)
- Optional elective courses

First Year, Spring Quarter
- MCP 210C – core course part 3 (5 units) “Systemic” and “Comparative”
- Companion Discussion courses to MCP 210C (2 units)
- Elective courses (Must be adviser approved)

Second Year
- Courses as needed to complete requirements
- Begin exam preparation/take exam by Spring of 2nd year, or submit Thesis

11) **Sources of funding:** No financial support is guaranteed by the graduate group.

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:
Ph.D. DEGREE REQUIREMENTS

1) Admissions requirements: Consideration for program admission requires a bachelor’s degree, three letters of recommendation, official transcripts, GRE General Test scores, TOEFL or IELTS score (if applicable) and an Office of Graduate Studies online application with fee by the stated admission deadline. A minimum GPA of 3.0 is required. However, admissions decisions are made on a case-by case basis. Meeting some or all of these criteria does not guarantee admission, but merely eligibility. The decision to recommend admission to the Dean of Graduate Studies will be made by the Program Admissions Committee on the basis of available space and the competitiveness of applicants compared to the eligible pool.

a) Prerequisites: In addition to the admission requirements stated above, applicants are expected to have passed the equivalent of the following UC Davis courses:

   Physics: One year of General Physics with laboratory or equivalent content, e.g. PHY 7A, 7B, 7C.

   Chemistry:
   • General Chemistry: One year of General Chemistry with laboratory or equivalent content, e.g. Chemistry 2A, 2B, and 2C.
   • Organic Chemistry: Two quarters of Organic Chemistry with laboratory or equivalent, e.g. Chemistry 8A and 8B.
   • Introductory Biochemistry: Two quarters of Biochemistry or equivalent content, e.g., BIS 102 and 103.
   • Biochemistry or Cell Biology laboratory: One quarter of Biochemistry or cell biology laboratory or equivalent content, e.g., MCB 120L or NPB 104L

   Mathematics: One year of Analytical geometry and calculus or equivalent content, e.g. Math 16A, 16B, 16C

   Statistics: One course in Introduction to Statistics or equivalent content, e.g., Statistics 13

   Biology: One year of General Biology or equivalent content, e.g. BIS 1A, 1B, and 1C.

b) Deficiencies: Students requiring more than two courses to remedy deficiencies in the above requirements will not normally be admitted. Course work deficiencies should be made up by the end of the first academic year following initial enrollment by earning a letter grade of “B” or better. Courses cannot be taken S/U unless the
courses are approved as exceptions by graduate council

2) **Dissertation Plan:**

   **Plan B.** Specifies a three member (minimum) dissertation committee.

3) **Course Requirements:**

   a) **Core courses**

      - Core Course in Physiology (MCP 210 A,B,C, fall, winter, spring, respectively)
        [16 units]
      - Companion Discussion courses to the MCP 210 series, MCP 298 [6 units]
      - Physiology Laboratory Rotations (MCP 210L fall) [5 units]
      - Statistics: One course [4 units] (See attached “Classes that may satisfy MCIP
        requirements – pending advisor approval.”)
      - Area of Specialization (cardiorespiratory, cellular, comparative, endocrinology,
        exercise, neurophysiology, reproductive, and systemic): two courses approved by
        the academic adviser [6 units]
      - Science Integrity either GGG 296 [2 units] or Responsible Conduct of Research
        (RCR) education program through office of research

   b) **Elective Courses:** See above under area of specialization where students can select
      courses.

   c) **Summary:**

      - Total units required: a minimum of 38 units with 34 graduate units and the
        remainder being at least upper division units. A minimum course load is 12 units
        each academic quarter. Per UC regulations students cannot enroll in more than 12
        units of graduate level courses (200) or more than 16 units of combined
        undergraduate and graduate level (100, 200, 300) courses per quarter.

      - Research and Dissertation: The doctoral dissertation, an original research project
        in physiology, must be completed under the guidance of a major professor who is
        a member of the Molecular, Cellular and Integrative Physiology Graduate Group.
        A dissertation committee of the major professor and two or three other faculty
        provides guidance and approves the completed dissertation. The principal
        objective of the doctoral program is completion of a scholarly dissertation.
4) **Special Requirements:**

- Students in the core course must receive a grade of B- or better to satisfy the core course requirements, although a 3.0 GPA or greater is required to take the Qualifying Examination.
- Students are expected to identify a major professor with whom they will conduct their thesis research by the end of winter quarter of the student’s first year. This selection is made by joint decision of the student and faculty member, and is based upon the experience of the laboratory rotation. Failure to secure a major professor due to student performance will be viewed as unsatisfactory academic progress.
- All Ph.D. students must serve as teaching assistants (TAs) in two appropriate courses prior to taking the Qualifying Examination. One must be a physiology laboratory course and the other can be any physiology related course. Students are expected to satisfy the TA English language proficiency requirement set out by Graduate Studies. If a student anticipates the TA requirement will not be met prior to taking their QE, an exception petition should be filed with the Committee on Educational Policy justifying the request.
- As evidence of successful progress in their dissertation research, students are required to present at the Molecular, Cellular and Integrative Physiology Graduate Group Research Colloquia at least once before 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 four graduate group faculty and one 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 until the posted due date (currently December 15) for the Fall entering class.

b) **Course Guidance or Advising Committee:** Students will be assigned a Graduate Adviser who will help plan an appropriate program of instruction. The adviser is also available for general counsel and guidance concerning the Molecular, Cellular and Integrative Physiology Graduate Group and University requirements for the designated degree and will interpret the rules and policies of Graduate Studies and the Molecular, Cellular and Integrative Physiology Graduate Group as they apply to the student’s specific area. There is a minimum 12 unit requirement per quarter rule for full time students. These 12 units can be made up of required courses and 299s.

c) **Qualifying Examination Committee:** The qualifying examination committee will consist of five faculty members, at least four of whom are members of the Molecular, Cellular and Integrative Physiology Graduate Group. The major professor and close
collaborators will be excluded from serving on the student’s QE. The Chair of the QE committee is expected to ensure that the student receives a fair examination. In assigning the QE committee, the area of the student's dissertation research will be considered such that at least one individual with expertise in this area is a member of the QE committee. The major professor and student should prepare a list of suggested examiners for the qualifying examination committee. They should indicate whom they recommend to chair the committee and then that list will be submitted to the MCIP Graduate Program Assistant. The Committee on Educational Policy (CEP) will formalize the QE committees for all second year students in Winter quarter from the suggested lists. However, it should be understood that CEP’s selections are also guided by the need to ensure representative participation of all group members.

For each student, the names of the proposed QE committee members are given to the Group Graduate Program Assistant who will contact the proposed members to inquire if they are willing to serve on the student’s committee. The faculty will have approximately 7-10 days to respond to this inquiry. Once availability and willingness to serve has been established, the Program Assistant fills out the Application for QE and sends it to the student’s Graduate Adviser. The Program Assistant will notify the student of the prospective composition of the QE committee. Upon notification of the prospective committee, the student may begin scheduling the QE. The Graduate Adviser will sign the Application for QE when the student has completed the program requirements as noted above and then return the signed form to the Program Assistant who submits the application to Graduate Studies after retaining a file copy. Graduate Studies verifies that each proposed member is qualified to sit on the committee and the Graduate Council Chair has the final approval of committee membership in accordance with Graduate Council policy (DDB 80, Graduate Council, B.1.). MCIP has been granted an exception to the policy requiring an outside member of the Group be on the QE Committee (July 2006). Upon approval from Graduate Studies on the QE committee membership, the Program Assistant will send a formal letter to the student and the committee members from CEP regarding the format of the exam and the committee responsibilities. The Program Assistant will also enclose a copy of the student’s transcripts in the letter to the QE committee chair. Graduate Studies will send a letter to the chair of the committee giving information on how to report the exam outcome, the reporting forms, and a list of the constituted committee.

d) **Dissertation Committee:** The Dissertation Committee is a three-member committee identified by the student, in consultation with the Major Professor and the Graduate Advisor. The majority of the committee should be from the MCIP program. The composition of the dissertation committee is entered on the Advancement to Candidacy Form by the Graduate Advisor and submitted to Graduate Studies for formal appointment in accordance with Graduate Council policy. The role of the Dissertation Committee is to advise the doctoral student on the research topic and methods, and then to review the final completed dissertation for acceptance. The Committee Chairperson (usually the Major Professor) should determine the desires of
the individual members regarding assistance with the research and dissertation review at the time the dissertation committee is constituted. Students are expected to meet with the Chair of their dissertation committee regularly. Dissertation committee members are expected to read and comment on a dissertation within four weeks from its submission. This time limit policy does not apply to summer periods for faculty holding nine-month appointments. The student and faculty will coordinate a timeline for the student to present the dissertation to the committee. This timeline must allow all dissertation committee members enough time to fulfill their responsibilities within the four-week deadline.

6) **Advising Structure and 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 nominated by the Chair of the program and appointed by the Dean of Graduate Studies, is a resource for information on academic requirements, policies and procedures, and registration information. The **Graduate Program Coordinator** assists students with identifying a major professor, identifying appointments, and general university policies. The **Mentoring Guidelines** can be found at [http://www.gradstudies.ucdavis.edu/gradcouncil/mentoring.pdf](http://www.gradstudies.ucdavis.edu/gradcouncil/mentoring.pdf).

7) **Advancement to Candidacy:** 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. Normally, students advance by the end of their second year. The student must file the appropriate paperwork with the Office of Graduate Studies and pay the candidacy fee in order to be officially promoted to Ph.D. Candidacy. [http://gradstudies.ucdavis.edu/gradcouncil/policiesall.html](http://gradstudies.ucdavis.edu/gradcouncil/policiesall.html).

8) **Qualifying Examination and Dissertation requirements:**

a) **Qualifying Examination.** Eligibility: A Molecular, Cellular and Integrative Physiology (MCIP) student must pass the oral qualifying exam (QE) prior to advancement to candidacy for the Ph.D. To be eligible for the exam, the student must have completed all MCIP courses, teaching expectations, and colloquium requirements earning a B- or better in the core courses, have a cumulative GPA of 3.0, removed any deficiencies on the transcript, and be in good academic standing. The student must be a registered student during the quarter in which the QE is taken.

The primary purpose of the Qualifying Examination (QE) is to evaluate the student’s competence in physiology as a whole and the student’s chosen area of specialization in particular. The QE should determine that the student has acquired sufficient knowledge in breadth and depth to be conversant with the general principles of physiology thereby enabling the integration of those principles around a physiological question or concept. The examination should confirm that the student is academically qualified to conceptualize a research topic, undertake scholarly research and
successfully produce the dissertation required for a doctoral degree. The QE will emphasize integration of learned concepts and not recitation of facts although knowledge of facts underpins the ability to integrate. The student will also present a dissertation research proposal with the purpose of demonstrating that the student can identify a significant question in physiology that includes demonstration that the student has completed a literature review of that topic, has identified a set of achievable goals and has designed appropriate experimental approaches to accomplish those goals. The dissertation research component of the exam is meant to be a proposal and not a research progress report and therefore, no data are expected. The student's previous academic record, performance on specific parts of the examination, and overall performance and potential for scholarly research will be evaluated in determining the outcome of the examination.

**Scheduling of the QE:** The normative time to advancement to candidacy is during the second year, unless exceptional circumstances exist. Students will receive an unsatisfactory progress report if the QE is not passed and does not advance to candidacy before the beginning of the third year. The unsatisfactory progress report will be initiated by the graduate advisor. If a student anticipates the normative time to QE completion will not be met, an exception petition should be filed with the Committee on Educational Policy justifying the request. The graduate group strongly encourages students to take the QE and be advanced to candidacy as soon as they are eligible and prepared.

Once a QE application is approved, Graduate Studies will send a copy of the approved QE application and a letter stating that it is the student’s responsibility to coordinate with committee members, including the scheduling of the QE. Should the student experience problems the QE chair will assist the student in arranging a time, date and place for the examination, and may be consulted on other logistical issues. It is also recommended that the student arrange to meet with each committee member to discuss matters concerning the examination. Students requiring accommodation for a disability must make this known before the exam so the chair can arrange appropriate accommodation. If, before the date of the approved examination, a change in the student’s health or personal situation makes it too difficult to take the examination as scheduled, the student must make this known to the examination chair so a postponement can be approved in consultation with the entire QE committee. The student is responsible for updating his/her adviser on the progress of their QE examination activity.

**Format of the QE:** The qualifying examination will be administered on a chalk/white board only. The exam should last no longer than 3 hours. The qualifying examination must include both of the following components (detailed below) with a greater proportion on the core and specialization areas emphasizing the integration of physiology in the student’s area of emphasis:

i) a dissertation research proposal

ii) an examination on the core physiological subject areas and specialization.
For the dissertation research proposal component, students will be expected to submit a written dissertation proposal to their committee at least one week prior to the oral QE. The goal of the dissertation research proposal is to describe a dissertation project that would be a substantial and original contribution to the field of molecular, cellular and integrative physiology, if carried out. The format should be similar to that of an NIH postdoctoral fellowship proposal. Organize sections of the research proposal to answer these questions: (1) Specific aims (State briefly the broad, long-term objectives of the work. Then state the specific purposes of the proposed research) (2) Background and significance. Why is the work important? 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 (3) Preliminary studies and/or 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.) (4) References. The total length should not exceed 5 pages for all sections. While students are encouraged to meet with their QE committee, students should not ask for, nor should the committee members provide, comments on weaknesses, potential problems and errors in the research proposals. The actual presentation of the proposal is to be extemporaneous and actual data are not required.

The intent of the QE is to determine that the student has acquired sufficient knowledge in breadth and depth to be conversant with the general principles of physiology. The student should be able to integrate those principles around a physiological question or concept. The individual committee members’ questioning on the core physiological subject areas and specialization should emphasize the integration of concepts learned through coursework rather than a restatement of facts already examined during the student’s coursework. The QE chair is obligated to ensure that QE committee evaluates the student’s capacity to integrate physiological principles. Prior to the QE, the committee will meet as a whole to coordinate the questioning of the student and clarify expectations during the exam. Annual mandatory workshops will be offered through MCIP to detail the committee expectations prior to, and during, the QE, including assistance in methods to develop integrative questions. All assigned QE faculty will be expected to attend an annual workshop in order to provide uniformity across the QE’s.

Qualifying Examination Evaluations. As noted above, the student's previous academic record, performance on specific parts of the examination, and overall performance/potential for scholarly research will be evaluated in determining the outcome of the examination. There are three possible outcomes of the examinations - pass, not pass, and fail. Pass advances the student to apply for
candidacy for the Ph.D. Fail means that the student is recommended for disqualification by the Dean of Graduate Studies. Not pass means that the student is required to retake all or part of the examination OR to satisfy another requirement. If a retake is required, 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 allow a student to Advance to Candidacy. Failure will result in recommendation for disqualification. Note: To officially advance to candidacy, the Dissertation Committee must be recommended and a fee must be paid to the Cashiers Office and the fully endorsed Advanced to Candidacy Petition can then be submitted to Graduate Studies.

Refer to the Graduate Council website for additional details regarding the Doctoral Qualifying Examination at:

b) The Dissertation: Information regarding the submission of your dissertation to the Office of Graduate Studies may be found at:
http://www.gradstudies.ucdavis.edu/students/degree_candidates.html

i) Dissertation: General Requirements: Filing of a Ph.D. dissertation with the Office of Graduate Studies is normally the last requirement satisfied by the candidate. The deadlines for completing this requirement are listed each quarter in the campus General Catalog (available online at the website of the Office of the Registrar). A candidate must be a registered student or in Filing Fee status at the time of filing a dissertation, with the exception of the summer period between the end of the Spring Quarter and the beginning of Fall Quarter. The PhD. Dissertation will be prepared, submitted and filed according to regulations instituted by the Office of Graduate Studies http://gradstudies.ucdavis.edu/students/filing.html. Satisfaction of this requirement must be verified by the Dissertation Committee Chair.

ii) Dissertation: The research conducted by the student must be of such character as to show ability to pursue independent research. The dissertation reports an original scholarly piece of work of publishable quality that solves a significant scientific problem in the field and is carried out under the supervision of a member of program while the student is enrolled in the program. The chair of the dissertation committee must be a member of the program and must be immediately involved with the planning and execution of the experimental work done to formulate the dissertation. The major professor’s laboratory is the setting for most of the student’s research activities, unless an alternative site and immediate supervisor are approved in advance by the Executive Committee. Students should meet regularly with their dissertation committee. The dissertation
must be submitted to each member of the dissertation committee at least one month before the student expects to make requested revisions; committee members are expected to respond within 4 weeks, not including summer months for nine month faculty. Informing committee members of progress as writing proceeds helps the members to plan to read the dissertation and provide feedback within this time frame. The dissertation must be approved and signed by the dissertation committee before it is submitted to Graduate Studies for final approval.

9) **Normative Time to Degree:**
   - Normative Time to Advancement to Candidacy: Six quarters (five quarters to complete course work and one quarter to prepare and pass qualifying exam).
   - Normative Time in Candidacy: Nine quarters
   - Total Time to Degree: 5 years

10) **Typical Time Line and Sequence of Events:** The student must find a major professor by the end of winter quarter in order to make satisfactory progress. Normally a student will complete course and teaching requirements, and pass an oral Qualifying Examination given by five faculty members, during the first two years of the program, then conduct and complete the dissertation research under the direction of a major professor, who serves as a research mentor. A committee approves the dissertation, and the student submits a dissertation to Graduate Studies to complete the degree.

First Year, Fall Quarter
- MCP 210A – core course part 1 (5 units) “Cellular” Physiology
- MCP 298 – Companion discussion to 210A (2 units)
- GGG 296 – Scientific Integrity (2 units) or responsible conduct of research (RCR) education program through office of research
- MCP 210L - Laboratory Rotation (5 units)
- Optional Adviser approved courses that meet degree requirements

First Year, Winter Quarter
- MCP 210B – core course part 2 (6 units) “Systemic” Physiology
- MCP 298 – Companion discussion to 210B (2 units)
- MCP 210 L - Laboratory Rotation (optional)
- Optional Adviser approved courses that meet degree requirements

First Year, Spring Quarter
- MCP 210C – core course part 3 (5 units) “Systemic” and “Comparative” Physiology
- MCP 298 – Companion discussion to 210C (2 units)
- 290 seminar (1 unit)
- Rotations or begin work in major professor’s laboratory
- Optional Adviser approved courses that meet degree requirements
Second Year

- Adviser approved courses as needed to complete requirements
- Teaching Assistantships
- Begin qualifying exam preparation
- Qualifying Exam – generally taken in spring

And beyond…

- Dissertation research
- Writing of Dissertation and Manuscripts
- Colloquium presentation

11) **Sources of Funding.** Ph.D. students will be typically be provided with a stipend for a minimum of five years. Funding is contingent upon making satisfactory academic progress. University tuition and fees will also be paid. The support will be from one or more of the following: graduate student researcher (GSR), fellowships, training grants and teaching assistantships. Continuous funding is dependent upon identifying a MCIP faculty who is prepared to support the student’s dissertation studies by the end of winter quarter of the student’s first year.

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.