June 20, 2023

Charles Bevins
Chair, Immunology Graduate Group

RE: Immunology Degree Requirements

Enclosed is a copy of the Immunology degree requirements as approved by Graduate Council on June 16, 2023. These degree requirements are now the revised, official document for the Immunology and will be posted to the Office of Graduate Studies program webpage: https://grad.ucdavis.edu/programs/gimm.

Thank you for your efforts on behalf of graduate education.

Sincerely,

Jeffrey Schank
Chair, Graduate Council

c: Duncan Temple Lang, Associate Dean for Graduate Programs, Graduate Studies
Jasmine Bonite, Director of Policy and Programs, Graduate Studies
Will Angel, Project Policy Analyst, Graduate Studies
Jessica Drushell, Graduate Program Coordinator, Immunology

GRADUATE GROUP IN IMMUNOLOGY
Ph.D. AND M.S. DEGREE REQUIREMENTS
Revised: 2009/10, 2019, 2023
Graduate Council Approval: June 16, 2023

MASTER OF SCIENCE (M.S.) PROGRAM

1) Admissions Requirements for the M.S. Degree

The Graduate Group in Immunology (GGI) confers M.S. degree conducted either under "Plan I" (written thesis) or "Plan II" (comprehensive exam). GGI does not directly admit students to the M.S. Plan II program, but PhD students may complete the Plan II requirements to earn an MS degree either *en route*, or as a change in their degree objective.

For direct admissions to the M.S. Plan I, the applicant must fulfill the following admissions requirements:

- Hold a bachelor's degree in a natural or physical science or engineering program.
- Meet the University of California minimum GPA requirement for admission, currently at 3.0.
- Applicants who have not studied at an English-speaking university must have done an English proficiency examination for international students (TOEFL or other University approved examination such as the IELTS) and must meet the Office of Graduate Studies minimum TOEFL score requirement (or equivalent for other University-approved examinations).
- Provide three letters of recommendation. Letters from faculty familiar with the applicant's research accomplishments are of particular value to the evaluation process.
- Provide a Statement of Purpose.
- Provide a Statement of Personal History.

a) Prerequisites: In addition, applicants are expected to have successfully completed upper division undergraduate courses in the biological sciences, e.g. immunology, microbiology, chemistry, biochemistry, cell biology and/or genetics. While there are no minimum or specific course requirements, the record of the student should demonstrate aptitude and interest in the biological sciences. They are also expected to have gained some relevant research experience prior to entering the program.

2) M.S. in Immunology, Plans I and II:

GGI's M.S. degree programs are conducted either under Plan I or II in accordance with regulation 500 of the Davis Division Academic Senate Regulations.

Plan I. This plan requires 30 units of graduate and upper division courses (the 100 and 200 series only) and, in addition, a thesis. The student must take the below listed coursework, which will ensure meeting the required minimum of 14 units of graduate work in the major field.

Plan II. This plan requires 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 this 18-unit requirement. A comprehensive final examination in the major subject is required of each candidate. No thesis is required. GGI does not admit M.S. students to the MS Plan II, but PhD students may complete the Plan II requirements to earn an MS degree either *en route*, or as a change in their degree objective.

3) Course Requirements

Core Courses, M.S. Plan I students (12 units):

IMM201 Basic Immunology	(4 units)
IMM201L Work in progress	(4 units)
IMM293 Current concepts in Immunology	(4 units)

Core Courses, M.S. Plan II students (8 units):

IMM201 Basic Immunology	(4 units)
IMM293 Current concepts in Immunology	(4 units)

Selective Courses (6-10 units):
The following classes are "selectives" for the Immunology Graduate Group course offerings. Students enrolled in the M.S. Plan I and II must take a minimum of 3 classes, i.e. a minimum of 6 – 10 units, from the list below.

Required selectives: Three courses selected from:

IMM203 Cancer Immunology	(2 units)
IMM204 Innate Immunity	(2 units)
IMM210 Neuroimmunology	(2 units)
IMM294 Comparative Clinical Immunology	(4 units)
IMM297 Mucosal Immunology	(2 units)
ETX260 Immunotoxicology	(3 units)
RAL209 Current Topics in Immunology: From Presentations to Grants	(3 units)
NUT 251 Nutrition and Immunity	(2 units)

Petition for Course waiver for Plan I students. To provide sufficient time for a student to take additional coursework in an area outside Immunology but closely related to the student's thesis project, which could otherwise not be met through the taking of electives (see below), a GGI Master Plan I student may petition the Executive Committee of GGI for release of a maximum of two selectives, but not core classes, in lieu of other graduate level or upper division undergraduate level classes that carry similar unit numbers. No petition may be granted to M.S. Plan II students.

Research (299 or equivalent)
Laboratory research credit (299) is required for M.S. Plan 1, and typical for M.S. Plan 2, but not explicitly required. For each 299 laboratory-research unit, 3 hours of laboratory research time are expected/week. A minimum of 12 units is required for completion of the M.S. degree in Plan 1; most students will take 36 units or more. For M.S. Plan 2, 18 units of graduate courses are required in the major field of immunology, and not more than 9 units of research (299 or equivalent) may be used to satisfy this 18-unit requirement. Otherwise, there is no restriction on the maximum number of 299 units allowed. Course registration numbers (CRN) are unique for each faculty mentor.

Seminars (2-3 units each year):
M.S. Plan I and Plan II students must take one participation seminar and one non- participation seminar for each year of enrollment (i.e. 2-3 units/year). Below is a list of seminars offered by members of GGI. Other seminars offered on the UC Davis campus might be taken in lieu of, or in

addition to those listed below with approval by the student's GGI advisor.

Seminars - One participation and one non-participation seminar per student per year.
Listed classes are examples only. The student's assigned GGI advisor must approve the chosen seminars.

IMM 296 Advanced Topics in Immunology	(1 unit, non-participatory)
MMI 291 Seminars in Microbiology and Immunology	(1 unit, non-participatory)
IMM 291 Seminars in Immunology	(2 unit, participatory)
PMI 298 Immunology Breakfast Club	(1 unit, participatory)

Electives (4-8 units):
In addition to the courses outlined above, M.S. degree students are expected to take 4 – 8 units of Elective Classes, such as additional GGI selective courses listed above, statistics, scientific writing or other classes that provide the M.S. degree students with additional research tools and skill sets. Classes should be graduate level or upper division courses. The student's assigned GGI Graduate Advisor must approve the chosen electives.

Summary:
All full-time GGI students enrolled in M.S. Plans I or II will be enrolled in a minimum course load of 12 units each academic quarter. Per Regulations of the Academic Senate, students are not required to take more than 12 units of graduate courses, or 16 units of graduate and undergraduate courses combined (with no more than 12 units of graduate courses). For the duration of the studies, M.S. Plan I student will enroll in graduate level coursework consisting of core classes (12 units), selectives (6 – 10 units), seminars (2-3 units/year), 4 – 8 units of upper division or graduate level electives, as well as 299 research units for a minimum of 30 units.

M.S. Plan II students will similarly enroll in graduate level coursework consisting of core classes (8 units), selectives (minimum 6 – 10 units), seminars (2- 3 units/ year) as well as 4 – 8 units of upper division or graduate level electives and 299 research units for a minimum of 36 units. The core classes, selectives, and seminars listed here are all graduate level classes in the major field of Immunology that can be used toward the 18 unit requirements. **Appendix 1** provides an example of a Study Plan for the M.S. Plan I or II.

4) Special requirements

M.S. degree students in Plan I are expected to present their research as a poster at the GGI Annual Retreat (February of each year) in their second year of study and, if applicable, yearly thereafter. They are also encouraged to present their research in form of an oral departmental seminar towards the end of their studies.

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) Advising Structure and Mentoring

The **Graduate Advisor** is appointed for the student by the GGI Chair and serves as a resource for information on academic requirements, policies and procedures, and registration information. Entering M.S. degree students are assigned one of the (currently 5) Graduate Advisers, who will act on behalf

of the student for the duration of their studies. The Graduate Adviser will explain and help to implement the GGI study plan, which outlines the course requirements, including the need for enrollment in a minimum of 12 units/quarter. These 12 units can be made up of required and elective courses and 299 units. Each Plan I student is given a Study Plan for M.S. Plan I students upon entering the program. The most recent Study Plan for M.S. Plan I students is also listed on the GGI website (http://immunology.ucdavis.edu).

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, which will meet with the student in regular intervals, at least once a year. The Mentoring Guidelines are sent to each mentor at the beginning of the first year of the student entering the program. They can also be found in the graduate student handbook, a hardcopy of which is provided to every incoming GGI student. In addition, both the guidelines and the student handbook can be found and downloaded from the GGI website (http://immunology.ucdavis.edu).

6) 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 is the Executive Committee of GGI plus additional members of the GGI faculty. The Executive Committee also invites six GGI students in good standing to participate in the interview process (see below) and to act as full voting members for the purpose of recommending to Graduate Studies the most competitive applicants for admission. The Admissions Committee consists of the Admissions Committee Chair, the Graduate Group Chair, the 3 elected members of the GGI faculty serving on the Executive Committee, Graduate Advisors (currently 5), the 6 students, plus additional GGI faculty members as needed depending on the size of the applicant pool. All members of the Admissions Committee have equal voting rights according to the bylaws of GGI. All members on the Admissions Committee review all applications. Based on a review of each entire application, a decision is made to either reject the application, or to invite the applicant to interview via video conference and then attend the recruitment event. The formal video conference interview is conducted by a panel of GGI faculty members and current students. Each panel includes at least three members of the Admissions Committee.

Following completion of all interviews, the interviewing panels (students and faculty) rank the applicants and make their recommendations to the Admissions Committee. Based on the available information from the online application and the formal video-conference interview, the Admissions Committee makes a recommendation to the Dean of Graduate Studies to either accept or reject an applicant's request for admission; the Dean of Graduate Studies has power of final admissions decisions. A ranked waitlist may be established from which additional applicants are selected should spaces open up.

b) Thesis Committee (M.S. Plan I students)

The M.S. Plan I student, in consultation with their Major Professor and Graduate Advisor, nominate 3 faculty to serve on the Thesis Committee. The Major Professor serves as the Chair of the Thesis 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 Thesis Committee will typically meet first in the Spring quarter of the first year, and then again at least once per year.

c) Comprehensive Examination Committee (M.S. Plan II students)

Under exceptional circumstances a student enrolled in the GGI PhD or M.S. Plan I program might request to change the degree objectives to a M.S. in Science Plan II. If recommended by the student's advisor, in consultation with the Major Professor, a three-faculty member Comprehensive Examination Committee will be assembled to conduct a comprehensive examination that covers depths and breadth of knowledge in immunology. The M.S. Plan II student, in consultation with their Major Professor and graduate advisor, nominate the Examination Committee to the Executive Committee for approval.

A Graduate Studies-approved PhD Qualifying Examination Committee (see PhD program) can serve as the M.S. Plan II Comprehensive Examination Committee. If the QE Committee fails the PhD student relative to PhD criteria, they may deem performance sufficient to meet the requirements of a M.S. level exam.

7) Advancement to Candidacy

Every student must file an official application for Candidacy for the Degree of "Master of Immunology" after completing one-half of their course requirements and at least one quarter before completing all degree requirements. Typically, this will be in Spring quarter of Yr 1. The Candidacy for the Degree of Master form can be found online at: https://grad.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 they have advanced to candidacy, the Graduate Adviser must recommend these changes to Graduate Studies. Students must have their Graduate Adviser, and for students in Plan 1 their 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 GGI graduate staff person, and the student. If the Office of Graduate Studies determines that a student is not eligible for advancement, the GGI program 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) <u>Thesis Requirements (Plan I)</u>

Students enrolled in the M.S. Plan I in Immunology are required to file a written thesis with Graduate Studies following approval by all members of the Thesis Committee. Students file their written thesis after they have advanced to candidacy. Students must be registered or in current filing fee status at the time of filing. The format of the thesis should follow the guidelines as outlined by Graduate Studies at https://grad.ucdavis.edu/finishing-your-degree. There are no requirements in terms of length, but the Master's thesis must represent a contribution to knowledge in immunology. The student is encouraged to prepare their results as a manuscript for publication, which can be used as the main body of the thesis together with a brief introduction that places the manuscript in the context of the current literature and concluding remarks at the end of the study. Samples of successfully submitted M.S. theses can be viewed in the GGI business office. The Thesis should be distributed to the Thesis Committee to allow at minimum three weeks for review and comments. The student will then satisfactorily address concerns by revising the Thesis and then redistribute the revised document to the Thesis Committee in a committee-specified timeframe. For the thesis to be acceptable for the degree, all Thesis Committee members must sign the title page.

b) <u>Comprehensive Examination (Plan II)</u>

GGI does not admit M.S. students to the MS Plan II, but PhD students may complete the Plan II requirements to earn an MS degree either *en route*, or as a change in their degree objective. Students may take the comprehensive examination once they have advanced to candidacy. The comprehensive examination for the M.S. Plan II degree in Immunology consists of two components: Preparation of a written scientific essay and an oral examination on materials covered in the curriculum (capstone requirements). The oral examination will usually be held during or after the Spring quarter of the year the student will graduate, but not before all core courses are taken successfully and the student is expected to fulfill all degree requirement in the ongoing quarter. The student in discussion with the Major Professor will select a topic in immunology that has to be approved by the Chair of the comprehensive Examination Committee. The student will write a 1,600 – 1,800 word manuscript plus references on that topic, in which they will critically evaluate the current stand of knowledge in the field. The essay should follow the format and content of a viewpoint or critical review article, such as those found in the journal "Trends in Immunology". The Major Professor may guide the students in the writing. The manuscript must be submitted to all members of the Examination Committee at least 14 days prior to the oral examination.

The oral examination will be divided into two parts. The first part is a discussion on the content and style of the written component. The student will be questioned on background of the covered material and asked to articulate the major rationale and the ideas brought forward in that manuscript. In the second part each member of the comprehensive Examination Committee will question the student on depth and breadth of knowledge in immunology as covered in the GGI classes the student has taken. The results of all examinations must be reported to Graduate Studies using the M.S. Report Form (https://grad.ucdavis.edu/forms). Students taking the exam must be registered or in current filing fee status at the time of the exam.

The student may pass both parts of the examination or may "not pass" or "fail" the written and/or oral part of the examination. A student who fails all or parts of the exam is subject to disqualification from further graduate work in the program. Students who "pass" the oral but who receives a "not pass" on the written examination may be asked to provide a rewritten proposal to the members of the Examination Committee in a committee-specified timeframe. Students who do not pass the oral examination part may retake the entire or parts of the exam, as specified by the Examination Committee. Retaking of all or components of the comprehensive examination must be agreed to by the Graduate Adviser and completed before the end of the next quarter. The comprehensive Examination Committee must pass a student by unanimous vote. The examination may be repeated once. Failure to pass either the written and/or the oral exam in a second attempt will result in a recommendation to the Dean of Graduate Studies for disqualification of the student from the graduate program.

9) Normative Time to Degree

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

10) Typical Timeline and Sequence of Events

The following is an example of a timeline for the **MS Plan I**. GGI does not admit M.S. degree students to the MS Plan II, but PhD students may complete the Plan II requirements to earn an MS degree either *en route*, or as a change in their degree objective.

Year 1

Fall		Winter		Spring	
IMM201	4	IMM293	4	IMM204	2
IMM201L	4	Non-GGI	2	IMM203	2
IMM296	1	RAL209	3	Non-GGI	4
IMM291	2	299 Research	3	299 Research	4
PMI298	1				

Winter/Spring of Year 1: Form Thesis Committee.
Spring of Year 1: Submit Advance to M.S. Candidacy form.

Year 2

Fall		Winter		Spring	
IMM291	2	MMI291	1	299 Research	12
299 Research	10	299 Research	11		

Spring of Year 2: File M.S. Thesis

11) Sources of funding

There is no guarantee of funding for students in the Master programs. Most M.S. degree students enter the program supported by stipends and/or fellowships or other means of self-support. Some M.S. degree students in Plan I may receive support for stipend, tuition remission, fees, benefits or other related expenses from their Major Professor via intra or extramural sources. GGI block grant allocations are not usually provided to M.S. degree students, as they do not participate in the rotation program. PhD students completing the MS degree (via MS Plan II) *en route* to their doctoral plan will be supported as described below for other PhD students.

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: https://grad.ucdavis.edu/planned-educational-leave-program-pelp.

PH.D. PROGRAM IN IMMUNOLOGY

1) Admissions Requirements for the Doctor of Philosophy

For admission to the PhD program in Immunology, the applicant must fulfill the following requirements:

- Hold a Bachelor's degree in a natural or physical science or engineering program.
- Meet the University of California minimum GPA requirement for admission, currently at 3.0.
- Applicants who have not studied at an English-speaking University must have taken an English proficiency examination for international students (TOEFL or other University approved examination such as the IELTS) and must meet the Office of Graduate Studies minimum TOEFL score requirement (or equivalent for other University-approved examination).
- Provide three letters of recommendation. Letters from faculty familiar with the applicant's research accomplishments are highly valued in the evaluation process.
- Provide a Statement of Purpose.
- Provide a Statement of Personal History.

a) Prerequisites: In addition, applicants are expected to have successfully completed upper division undergraduate courses in the biological sciences, e.g. immunology, microbiology, chemistry, biochemistry, cell biology and/or genetics. While there are no minimum or specific course requirements, the record of the student should demonstrate aptitude and interest in the biological sciences. Applicants are also expected to have gained relevant research experience prior to entering the program.

2) Dissertation Plan

The candidate shall be subject to the provisions of the dissertation "**Plan C"** as described under Section 520 in the Davis Division Academic Senate Regulations.

Plan C specifies a three-member (minimum) Dissertation/Final-examination Committee, a final oral examination, and no required exit seminar.

3) Course Requirements

Core Courses (17 units). The following core courses are to be taken by all PhD students:

IMM201 Basic Immunology	(4 units)
IMM201L & IMM202L (Laboratory Rotations)	(4 + 5 = 9 units)
IMM293 Current Concepts in Immunology	(4 units)

Students enrolled in the dual degree MD/PhD or DVM/PhD programs must take the same core courses with one *exception*, namely, they may omit the second quarter of laboratory rotations (IMM202L).

Selective Courses (6-10 units):

Students must take a minimum of three "selective" courses, i.e. a minimum of 6 – 10 units, from the list below. The *exception* is for students enrolled in the dual degree MD/PhD or DVM/PhD programs, who must take only a minimum of 2 selectives, i.e. a minimum of 4 – 7 units.

Three courses selected from:

IMM 204 Innate Immunity	(2 units)

IMM203 Cancer Immunology	(2 units)
IMM210 Neuroimmunology	(2 units)
IMM294 Comparative Clinical Immunology	(4 units)
IMM297 Mucosal Immunology	(2 units)
ETX260 Immunotoxicology	(3 units)
RAL209 Current Topics in Immunology: From Presentations to Grants	(3 units)
NUT 251 Nutrition and Immunity	(2 units)

Petition for Course waiver To provide sufficient time for a student to take additional coursework in an area outside immunology but closely related to the student's PhD project, which could otherwise not be met through the taking of electives (see below), a GGI PhD student may petition the Executive Committee of GGI for release of a maximum of one selective, but not core classes, in lieu of other graduate level or upper division undergraduate level classes that carry similar unit numbers.

Research (299 or equivalent)
Laboratory research credit (299) is required for the PhD. For each 299 laboratory-research unit, 3 hours of laboratory research time are expected/week. A minimum of 36 units is required for completion of the PhD; most students will enroll in 108 units or more. There is no restriction on the maximum number of 299 units for the PhD. Course registration numbers (CRN) are unique for each faculty mentor.

Seminars (2-3 units each year):
All PhD students must take one participation seminar and one non-participation seminar for each year of enrollment (i.e. 2-3 units/year) until advancement to candidacy. Below is a list of seminars offered by members of GGI. Other seminars offered on the UC Davis campus can be taken in lieu of, or in addition to those listed below with no approval needed.
Listed courses are examples only.

IMM296 Advanced Topics in Immunology	(1 units, non-participatory)
MMI291 Seminars in Microbiol. and Immunol.	(1 unit, non-participatory)
IMM291 Seminar in Immunology	(2 unit, participatory)
PMI298 Immunology Breakfast Club	(1 unit, participatory)

Electives (8 units):
In addition to required immunology courses, PhD students are expected to enroll in elective courses of their choice, such as additional GGI selective courses listed above, statistics, scientific writing or other classes that provide the student with additional research tools and skill sets. Classes should be graduate level or upper division courses. The student is expected to enroll in a minimum of 8 units of electives. Classes in the outside area may be used to fulfill GGI requirements for elective courses for a maximum of 3 units. No approval is required for the choice of electives, but consultation with the Graduate Advisor and/or Major Professor is encouraged.

The *requirement* for electives is waived for GGI PhD students enrolled in the dual degree DVM/PhD or MD/PhD program.

Outside Area Courses:
The PhD student will be examined in the Qualifying Examination on an "outside area" of study,

chosen by the student. This area usually, but not necessarily, relates to the student's research project (examples are virology, bacteriology, cancer biology, neurology, toxicology). To help prepare the student for this area of examination, the student is expected to enroll in a minimum of 3 units upper division undergraduate or graduate level classes. These units may be used to fulfill part of the course requirements for electives (see above).

The *requirements* for electives, including coursework for the outside area, are waived for GGI PhD students enrolled in the dual degree DVM/PhD or MD/PhD programs. However, the dual degree students will be examined on an outside area during the Qualifying Examination, and if needed for adequate preparation are encouraged to take related coursework as necessary.

Courses for a Designated Emphasis program:
GGI PhD students enrolled in a Designated Emphasis (DE) program must take all required classes for the relevant DE as outlined in the DE degree requirements as additional course load. The classes may not be used to fulfill any of the GGI course requirements, including electives.

Summary:
GGI students enrolled in the PhD program will carry a minimum course load of 12 units each academic quarter for a minimum of 48 units prior to advancement to candidacy. As per regulations of the Academic Senate, students are not required to take more than 12 units of graduate courses, or 16 units of graduate and undergraduate courses combined (with no more than 12 units of graduate courses). In completing the 48 units, the student will complete 2 core courses (8 units), 2 quarters of laboratory rotations (IMM201L/202L, 9 units), 3 selectives (6 – 10 units), 8 units of electives, one participatory and one non-participatory seminar (2-3 units/year), as well as 299 research units. Students are expected to fulfill all course work requirements by the Spring quarter of their second year and conduct their Qualifying Examination before the start of the 3rd academic year.

Students in the dual degree (DVM/PhD or MD/PhD) program are expected to identify their Major Professor prior to entering the graduate program through informal rotations during the two summers in which they are enrolled in the Medical or Veterinary School prior to entering the graduate program. Therefore, core course requirements are reduced to 4 units of IMM201L (the rotation program) plus IMM201 and IMM293 for a total of 12 units. Furthermore, they are required to take 2 selectives (4 – 7 units), as well as 299 research units for a total of 12 units each academic quarter for a minimum of 36 units prior to advancement to candidacy. The requirement for electives is waived. However, dual degree students are encouraged to take coursework relevant to the outside area of study. It is expected that they fulfill all course requirements and conduct their Qualifying Examination before Winter quarter of their second year.

Dual degree students who drop-out of the MD or DVM program after year 2 of their clinical degree program (i.e. after they already entered the graduate program) will continue to follow the study plan and course requirements for dual degree students, provided they successfully passed the course work for the clinical degree for years 1 and 2. Students who drop-out of the clinical program prior to successful completion of year 2, or who do not successfully complete the clinical program up to year 2, must reapply for admissions to GGI and would, if admitted, follow the study plan and course requirements of non-dual degree PhD students.

Appendix 2 and Appendix 3 provide outlines of Study Plan examples for the PhD and the dual degree DVM or MD/PhD graduate program, respectively.

4) **Special Requirements**

GGI PhD students who are in their second year and above (and dual degree PhD students first year and above) are expected to present yearly a poster and/or oral presentation during the GGI annual retreat outlining their major research accomplishments. PhD candidates are also expected to meet at least once a year with their Dissertation Committee to report on progress and to receive committee-feedback; this annual meeting is to include all members of the Dissertation Committee. Exceptions to this rule require permission of the Executive Committee.

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) **Advising Structure and Mentoring**

The **Graduate Advisor**, who is appointed for the student by the GGI Chair, is a resource for information on academic requirements, policies and procedures, and registration information. The advisor serves the student for the duration of their studies. They will meet regularly with the student, particularly during the first 2 quarters to discuss issues regarding selection of a Major Professor and course work requirements. The **Major Professor** is the faculty member who supervises the student's research and dissertation and is chosen by the student in discussion with the graduate advisor and following a rotation in their laboratory. The Major Professor serves as the Chair of the **Dissertation and Final Examination Committee,** which will be formed following successful completion of the Qualifying Examination. The entire Dissertation Committee shall meet with the student at regular intervals, at least once a year. The **Mentoring Guidelines** are sent to each Major Professor at the beginning of the Spring quarter after the student has selected their mentor. They can also be found in the graduate student handbook, a hardcopy of which is provided to every incoming GGI student. In addition, both the guidelines and the student handbook can be found and downloaded from the GGI website (http://immunology.ucdavis.edu).

6) **Committees:**

a) **Admission Committee**

Once a completed application, all supporting material, and the application fee have been received by Graduate Studies, the application packet will be submitted to the Admissions Committee. The Admissions Committee is the Executive Committee of GGI plus additional members of the GGI faculty. The Executive Committee also invites six GGI students in good standing to participate in the interview process (see below) and to act as full voting members for the purpose of recommending to Graduate Studies the most competitive applicants for admission. The Admissions Committee is chaired by the Graduate Group Chair, or an Admissions Chair appointed by the Executive Committee, and consists of the 6 students, 3 elected Executive Committee members, GGI Student Advisors (currently 5), plus additional faculty members as needed. All members of the Admissions Committee have equal voting rights according to the bylaws of GGI. All members on the Admissions Committee review all applications. Based on a review of each entire application, a decision is made to either reject the application, or to invite the applicant to interview via video conference and then attend the recruitment event. The formal video conference interview is conducted by a panel of GGI faculty members and current students. Each panel includes at least three members of the Admissions Committee.

Following completion of all interviews the interviewing panels (students and faculty) rank the

applicants and make their recommendations to the Admissions Committee. Based on the available information from the online application and the personal interview, the Admissions Committee makes a recommendation to the Dean of Graduate Studies to either accept or reject an applicant's request for admission; the Dean of Graduate Studies has power of final admissions decisions. A ranked waitlist may be established from which additional applicants are selected should spaces open up.

b) Graduate Advisor

Each entering PhD student is assigned one of the (currently 5) Graduate Advisors, who will act as their Graduate Advisor for the duration of their studies. Changes in Graduate Advisor can be made if it facilitates better access to the Advisor, such as co- location of student and Advisor on the Sacramento campus versus the Davis campus. The Graduate Advisor will meet with the student regularly, particularly until the student has chosen a Major Professor and until the Qualifying Examination. The advisor outlines and helps to implement the GGI study plan, including the course requirements and reminds the student of campus policies. Signature by the Graduate Advisor is also required on the yearly student progress report form and most other forms for Graduate Studies.

c) Qualifying Examination Committee

The oral Qualifying Examination is administered by a committee appointed by the Dean of Graduate Studies on the recommendation of the Executive Committee of GGI. In accordance with the guidelines and policies (Service on Advanced Degree Committees and Doctoral Qualifying Examinations) set forth by Graduate Council, the QE Committee consists of five faculty members, of which four are from within the GGI and one is outside of the GGI. The graduate student will be asked by the administrator of the Graduate Group to provide the name of a faculty member that will act as Chair of the QE Committee. The student will further be asked to provide the name of at least one faculty member that can test the student in the outside area of research. While the Chair is to be selected from the faculty members of the GGI, the faculty member examining the outside area will often be a faculty from outside of the GGI. The Executive Committee will identify three additional faculty members that will examine the student in general immunology and the sub-specialties in immunology. If a student is also enrolled in a DE program, one of the five members will belong to that DE program and will examine the student on a topic relevant to the DE. The Major Professor of a student must not participate in the exam.

d) Dissertation Committee

The PhD student, in consultation with their Major Professor and Graduate Advisor, nominates three faculty to serve on the Dissertation Committee. The Major Professor serves as the Chair of the Dissertation Committee. 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 student shall meet with the full Dissertation Committee on a regular basis, at least once a year. During that meeting the student should present the research work conducted for the PhD. The Dissertation Committee should judge the level of progress and guide the student in their future scholarly work. The Dissertation Committee shall also establish and outline to the student what if any additional research work is necessary to complete the dissertation requirements. This Dissertation Committee shall guide the student through the studies and conduct a final oral examination.

e) Final Examination Committee

The three-member Dissertation Committee will serve also as the Final Examination Committee.

The Committee shall conduct a final oral examination following an oral presentation of the dissertation by the student. Each member of the Committee signs the dissertation after successful completion of the oral examination.

7) Advancement to Candidacy

The student is eligible for Advancement to Candidacy after successful completion of all graduate program degree requirements and after passing the Qualifying Examination i.e. during or Spring or the Summer of their second year (6^{th}-7^{th} quarter) but no later than the end of the Winter of the third year (8^{th} quarter). The student must file the appropriate paperwork with the Office of Graduate Studies and pay the candidacy fee to be officially promoted to Ph.D. Candidacy. Refer to the Graduate Council website for additional details regarding the Doctoral Qualifying Examination at https://gradstudies.ucdavis.edu/doctoral-qualifying-exam.

8) Qualifying Examination and Dissertation requirements:

a) Dissertation Plan

The dissertation requirements for the GGI PhD program are those outlined for the dissertation Plan C under 520 in the Davis Division Academic Senate Regulations. Dissertation Plan C specifies a three-member dissertation/final examination committee, a final oral examination, and no exit seminar.

b) Qualifying Examination requirements

Before advancing to candidacy for a doctoral degree, a GGI student must have satisfied all requirements set by the graduate program, must have received a minimum grade of B (3.0) in all core courses and must have passed their Qualifying Examination before a committee appointed to administer that examination.

All students will complete the course requirements before taking their Qualifying Examination. This includes course requirements for a DE.

The Qualifying Examination will consist of an oral examination of about 3 hours in length.
A written research proposal should be provided to members of the Qualifying Examination Committee at least 10 days before the exam.

The Qualifying Exam should be taken at some point between the Spring quarter of year two and before the start of the 3rd academic year in the program.
Passing the qualifying exam makes the student eligible for advancement to candidacy.

c) The written component of the Qualifying Examination.

The written component of the exam consists of a research proposal of no more than 7 pages and no less than 4 pages in length, including references, in 12-pt font with 1-inch margins, describing the student's dissertation-specific research aims, the gap of knowledge, the hypotheses to be addressed, any research progress to date, and the experimental approach.

- Concepts within the research proposal are to be discussed with the student's Major Professor. The writing of the proposal should be the student's work, 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.

d) <u>The oral component of the Qualifying Examination</u>.

- The oral portion of the Qualifying Exam is intended to demonstrate the student's critical thinking abilities, powers of imagination and synthesis, and broad general knowledge of the field of immunology. The Qualifying Exam will follow the guidelines and policies set forth by Graduate Council (https://academicsenate.ucdavis.edu/committees/graduate-council/policies). The Chair of the QE Committee, in consultation with the other members will decide on the precise format, but ordinarily will adhere to the following format:

    - The student is to orally present the dissertation proposal to the QE Committee (15 – 20 minutes). Following this presentation, the student will discuss with the committee the underlying hypotheses and rationale of the studies, experimental approaches and pitfalls and alternative approaches, as well as details on specific techniques used in the proposed work.

    - Following discussion of the proposed research, the student is to be examined in general immunology, two subtopics in immunology in depth (chosen by the student, with examples being innate immunity, adaptive immunity, mucosal immunology, autoimmunity, nutrition and immunity), as well as an outside area of research that usually is, although does not have to be related to the topic of the dissertation (Virology, Microbiology, Neurology, Pathology). This component of the exam focuses on the broad knowledge in immunology and their chosen areas in the field. Depth of knowledge, particularly in two subareas of immunology, are to be assessed.

- The student will be notified about the outcome of the Qualifying Examination (pass, not pass, fail) immediately following a brief discussion by the QE Committee. The QE Committee will evaluate the student's preparation to embark on a special area of research 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 for a respected position in the field of immunology as an educator or researcher.

- A student who passes the examination will be eligible to advance to PhD candidacy following submission of the required signed documents with Graduate Studies.

- In the event of a “not pass” the student will have an opportunity to remediate identified deficiencies in a timeframe determined by the QE Committee, but no later than the end of two quarters following the unsuccessful taking of the original exam. The QE Committee will determine the extent of remediation or reexamination (for example, retake of all or certain components of the oral exam; rewriting of the written proposal or other corrective measures). The outcome of a repeat exam will be either a “pass” or “fail”.

- In the event of a “fail” to pass the QE on the second attempt, a Graduate Studies-approved PhD QE Committee can serve as the M.S. Plan II Comprehensive Examination Committee (see M.S. requirements). The QE Committee might fail the PhD student relative to PhD criteria, but may deem the performance sufficient to meet the requirements of a M.S. level exam. In that case the QE Committee will ask the student to provide the written capstone requirement for a M.S. Plan II within a certain timeframe, but no longer than 3 months after the oral examination. Following submission of that document, the committee will test the student only on the written component of the M.S. Plan II in a separate exam, of about 1h length. The exam is to be held with at least 3 members of the QE Committee present. The

outcome of the exam will be a "pass" or a "fail". Failure to pass the written component of the M.S. Plan may lead to disqualification from the program. Alternatively, a student who fails the Qualifying Examination might petition the Executive Committee to support a change in degree objectives for a M.S. Plan I (thesis). Failure of the student to apply to the Executive Committee for support for a change in degree objective to the M.S. (Plan I or II) within 7 days following a failed Qualifying Examination will lead to a recommendation for disqualification from the program.

e) <u>The dissertation</u>

The PhD student will provide a written synopsis of the scholarly research activities conducted for the PhD degree in form of a written dissertation. The content of this dissertation will be presented during the final oral exam. The dissertation should be comprised of an overall introduction to the topic and research problem at hand, at least two or more research chapters outlining the original research conducted for the PhD and a brief overall conclusion section that describes how the completed work affects the standing knowledge of the research problem investigated. The chapters describing the original research may be organized in form of a research publication. There is no absolute requirement that any or all parts of the dissertation are published prior to degree submission or award. However, it is expected that at least some part of the original scholarly work will result in publication(s) to aid the dissemination of research information, allow for broader peer review of the work, as well as to allow public recognition of the student's work.

There are no specific requirements as to the length, style and format of the dissertation in addition to those outlined above. However, the dissertation must fulfill the requirements set forth by the Dissertation Committee and comprise a generally acceptable, consistent and understandable document.

f) <u>The final examination</u>

Prior to the final examination, the student shall provide to the Dissertation Committee an oral presentation of the dissertation. The oral presentation shall be open to the campus community, while the final examination itself shall be restricted to the members of the Dissertation Committee, which serves as the Final Examination Committee. Justified requests for attendance at the oral examination shall be made in writing to the Chair of GGI no later than 2 weeks prior to the date of the examination.

9) Normative Time to the PhD Degree

Normative time to Advancement to Candidacy is 6 quarters for PhD students and 3 quarters for dual degree DVM/PhD or MD/PhD students. Normative time in Candidacy is 9 quarters for completion of the dissertation and passing of the oral final examination. Overall, normative time for completion of the degree is 12-15 quarters.

10) Typical Timeline and Sequence of Events

PhD students will choose a Major Professor during the Winter quarter of their first year. Course requirements are generally completed no later than Spring quarter of year 2 (or year 1 of graduate work for dual degree PhD students) at which time the student will prepare for the Qualifying Examination. The Qualifying Examination should be completed before the start of Winter quarter year 3. This is usually followed by 9 – 12 quarters of research work during which time the student will conduct research in the laboratory of the Major Professor and is encouraged to participate in seminars and journal clubs offered by members of GGI and to present a poster each year at the GGI annual retreat. Completion of the work for the dissertation is determined after discussions with the Major

Professor and the Dissertation Committee usually after 9 – 12 quarters in candidacy. After the Dissertation Committee has received the completed written dissertation, and immediately following an oral presentation of the dissertation by the PhD student, which is open to the campus community, the Dissertation/Final Examination Committee will conduct a final oral examination of the student.

Example PhD Study Plan (course numbers and the number of units are shown)

Year 1

Fall		Winter		Spring	
IMM201	4	IMM20L	5	IMM203	2
IMM201L	4	IMM293	4	IMM204	2
IMM296	1	MMI200D	3	BIM209	2
IMM291	2			299 Research	6
IMM298	1				
IMM201	4				

Year 2

Fall		Winter		Spring	
IMM210	2	RAL209	3	IMM298	1
ETX260	3	NPB103	3	299 Research	11
299 Research	7	MMI291	1		
		299 Research	5		

Spring/Summer of Year 2: Qualifying Examination and Advance to Candidacy

Summer Year 2/ Fall Year 3: Form Dissertation Committee

Year 3 – completion

299 unit (12/quarter)
Non-participatory seminars (encouraged)
Yearly poster presentation at annual retreat

Prior to completion (Summer of year 5):

Final Oral Examination
Filing of written Dissertation with Graduate Studies

11) Sources of funding

Each entering graduate student in the PhD program who conducts laboratory rotations during the Fall of their first year is given one quarter of financial support covering both stipend and fees and if applicable, non-resident tuition costs. Following the GGI-supported rotation period, the identified Major Professor is expected to provide financial support for the PhD student, usually in form of a GSR appointment and must declare financial commitment and support before taking on a student. A mix of support may be used over the course of a PhD student's studies, including Financial Aid; Teaching Assistantships; Research Assistantships; Fellowship; Scholarships, and Grants. The Major Professor is expected to work with the student to ensure the student's continuous financial support.

Fees and Non-resident Tuition Costs are subject to yearly adjustments, as are stipends.

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/.

13) Leaving the program prior to completion of the PhD requirements.

See section 8.d. above (page 16). Should a student leave the program prior to completing the requirements for the PhD, they may still be eligible to receive the M.S. degree if they have fulfilled all the requirements (see M.S. section). Students can use the Change of Degree Objective form available from the Registrar's Office: https://grad.ucdavis.edu/changes-major-or-degree-objective.

Appendix 1

M.S. Study Plan for students in the Graduate Group in Immunology

Year 1	Class code	Class Title	Units*	Other events
Fall	IMM201 IMM201L IMM296 IMM 291 PMI298	Introductory Immunology Work in Progress Non-participatory Seminar 1 (Advanced Topics in Immunology or other) Participatory Seminar 1 (Seminars in Immunology or other) Participatory Seminar 2 (Immunology Breakfast Club or other)	4 4 1 2 1	WOW Grad Studies Introduction to GGI Meet Graduate Adviser Welcome BBQ Develop research plan with mentor
Winter	IMM293 Variable Vari	Current Concepts in Immunology Selective 1 Elective 1 ¶ 299 Laboratory research units	4 Variable Variable Variable	Annual Retreat Meet Graduate Adviser
Spring	Variable V Variable	Selective 2 Selective 3 Elective 2 ¶ 299 Laboratory research units	Variable Variable Variable	Meet the Chair Form Thesis Committee Submit Advance to Candidacy form.
Summer		Research		Meet with Thesis Committee
Year 2	299	¶ 299 Laboratory research units Seminar (non-participatory) Seminar (participatory) Electives	Variable Variable Variable	Experimental Work Meet at least once with Thesis Committee Prepare poster for annual retreat. Write and submit thesis

* Each quarter (FWS) enrollment must be for a minimum of 12 units

¶ Please note that for each laboratory unit (299 research units), 3 hours of laboratory research time are expected/week. A minimum of 12 units is required for completion of the M.S. degree. Course registration numbers (CRN) are unique for each faculty mentor.

Appendix 2 **Study Plan for PhD students in the Graduate Group in Immunology**

Year 1	Class Code	Classes*	Units**	Other events
Fall	IMM201 IMM201L IMM296 IMM291 PMI298	Introductory Immunology Laboratory Rotations Non-participatory Seminar 1 (Advanced Topics in Immunology) Participatory Seminar 1 Participatory Seminar 2 (Seminar in Immunology) Participatory Seminar (Immunology Breakfast Club)	4 4 1 2 1	GGI Orientation Meet your Adviser Welcome BBQ Identify Major Professor
Winter	IMM201L IMM293	Laboratory Rotations Current Concepts in Immunology ***Elective 1	5 4 3	Annual Retreat Meet your Adviser Start work with identified Major Professor
Spring	Variable Variable Variable	Selective 1 299 Research Units *** Elective 2	Variable Variable Variable	
Summer		Research Seminars		Develop Study Plan Meet with Adviser – clear Study Plan/Identify outside area
Year 2				
Fall	Variable Variable Variable	Selective 2 Participatory seminar 1 (Seminars in Immunology or other seminar) 299 Research Units Elective 3 (Outside area)	Variable Variable Variable Variable	Welcome BBQ
Winter	RAL 209 Variable Variable	Selective 3 (RAL209 or other selective) 299 Research Units Non-participatory seminar 1	4 Variable Variable Variable	Annual Retreat (prepare first poster) Meet with Adviser – identify potential QE Committee members
Spring	Variable Variable PMI290	Elective 4 299 Research Units Participatory Seminar 2 Immunology Breakfast Club (QE prep) Journal Club	Variable Variable Variable	Meet the Chair Qualifying Examination – Advance to Candidacy
Summer		Qualifying Examination Research		QE – Advance to Candidacy Identify Dissertation Committee
Years 3 – 5				
	Variable	299 Research Units Journal Club Seminars	12/qtr	Experimental Work Meet at least once per year with Dissertation Cmt Prepare poster for annual retreat

*When a Designated Emphasis (for example Biotechnology, Vector Borne Diseases) is pursued, all required class work (for the DE) must be completed in addition to the required class work for Immunology before sitting the qualifying examination (QE). 1 – 2 classes can still be ongoing in the quarter in which the QE is held. In that case advance to candidacy will occur only after classes are taken successfully.
** Each quarter (FWS) enrollment must be for a minimum of 12 units
*** Elective courses are to be chosen in discussion with mentor and student adviser. A minimum of 8 units is required Electives can be selectives in addition to the 3 required selectives and/or courses in outside area or other upper division undergraduate or graduate level courses.
¶ Please note that for each laboratory unit (IMM201L or 299 research units), 3 hours of laboratory research time are required/week. Therefore, for 5 units of IMM201L will translate to 15 hours/week during the laboratory rotation, 4 units equals 12 hours/week.

Appendix 3

PhD Study Plan Example for Dual Degree (MD or DVM/PhD) students in the Graduate Group in Immunology

Year 1	Class code	Class Title*	Units**	Other events
Fall	IMM201 IMM201L IMM296 IMM 291 PMI298	Introductory Immunology Work in Progress Non-participatory Seminar 1 (Advanced Topics in Immunology) Participatory Seminar 2 (Seminar in Immunology) Participatory Seminar (Immunol. Breakfast Club)	4 4 1 1 2	GGI Orientation Meet your Adviser Welcome BBQ Develop Study Plan / outside area
Winter	IMM293 RAL 209	Current Concepts in Immunology Selective 1 (Current Topics in Immunology: From Presentations to Grants or other selective) ***Outside area courses ¶ "299" Research Units	4 Variable Variable Variable	Annual Retreat Meet with Adviser – identify potential QE Committee members
Spring	Variable Variable	Selective 2 Selective 3 ¶ "299" Research Units Participatory seminar 3 (Immunology Breakfast Club (QE prep))	Variable Variable Variable 1	
Summer		Research Seminars		QE – Advance to Candidacy Identify Dissertation Committee
Years 2 - …		299 Units Journal Club Seminars	12/qtr	Experimental Work Meet at least once per year with Dissertation Committee Prepare poster for annual retreat

*When a Designated Emphasis (for example Biotechnology, Vector Borne Diseases) is pursued, all required class work (for the DE) must be completed in addition to the required class work for Immunology before sitting the qualifying examination (QE). 1 – 2 classes can still be ongoing in the quarter in which the QE is held. In that case advance to candidacy will occur only after classes are taken successfully.

** Each quarter (FWS) enrollment must be for a minimum of 12 units

*** Non-GGI elective courses are not a requirement for dual degree PhD students. However, an outside area of study must be defended in the QE and enrollment in additional classes is recommended.

¶ Please note that for each laboratory unit (IMM201L or 299 research units), 3 hours of laboratory research time are required/week. Therefore, for 4 units of IMM201L will translate to 12 hours/week during the laboratory rotation.