COMPARATIVE PATHOLOGY GRADUATE GROUP DEGREE REQUIREMENTS
Revised: 2005, August 1, 2008
Graduate Council Approval: December 3, 2008

Master's Degree Requirements

1) Admissions requirements

Admission to the GGCP is generally open only for the Fall Quarter. It is the applicant’s responsibility to ensure that all application materials are received by the on-line application system by the deadline. See admission deadlines at http://www.gradstudies.ucdavis.edu/programs/program_detail.cfm?id=28

Because the program in comparative pathology is diverse, applicants must contact and obtain sponsorship of a faculty member in the group who is willing to serve as their major professor should they be admitted. If an applicant has not identified a faculty member to serve as their sponsor, we will assist them with this process. Applicants will contact Comparative Pathology well in advance of the application deadline and provide a CV as well as clearly stated interests and goals in the field of Comparative Pathology.

The applicant should also ask the faculty sponsor to write to the master adviser stating his/her willingness to serve as major professor if the applicant is accepted into the graduate program.

It is most important to note that admission to the Group requires acceptance by a major professor in the group in the applicant’s desired field of specialization before a recommendation for admission is forwarded to the Office of Graduate Studies.

The student’s sponsoring major professor must be a member, or willing to become a member, of the Graduate Group in Comparative Pathology.

GPA of 3.0 or greater (on a 4.0 scale) for undergraduate courses is required. Applicants with a professional degree from an AVMA-accredited veterinary school or an AMA-accredited medical school must have a GPA of 3.0 or greater for courses taken during the first two years of the professional curriculum. GRE scores from the general test (verbal, quantitative, and analytical) must be submitted. Applicants, who have received a DVM or MD from an AMVA- or AMA-accredited professional school and who have remained in a professional or post-professional capacity, are not required to submit GRE scores since similar standardized test scores were submitted for admission to the professional school.

International students who have not studied at an institution where English was the language of instruction must obtain a score of 550 (written), 213 (computer based), or 68 (iBT, internet-based) or better on the TOEFL before applying for admission.
Undergraduate Preparation For Admission

For applicants without a professional medical degree, a strong background in biological sciences is essential. It is recommended that applicants complete course work in the areas of inorganic and organic chemistry, biology, and biochemistry. It is recommended that applicants take some additional biomedical/life sciences courses in anatomy, histology, embryology, cell biology, bacteriology, virology, parasitology, immunology and hematology.

Potential comparative pathology students who do not have a veterinary or medical degree will be notified by the Master Adviser of any prerequisites to be taken before they are eligible to enroll in the required core courses. They may be accepted into the program provided their limited deficiencies can be corrected prior to advancement to candidacy.

2). Master's Degree and Master's Plan

The GGCP only accepts students into the MS Plan I, which requires a written thesis, and awards a Master's of Science degree upon fulfillment of the degree requirements. Additional information can be found at the following site: http://www.gradstudies.ucdavis.edu/facstaff/HandbookFeb08.pdf.

The minimum residency requirements for the MS degree is three quarters, but the amount of time spent by most students in this program is six to nine quarters.

Description of the MS Plan I

The student is required to take a minimum of 30 quarter units of upper division and graduate course work and submit a thesis based on original research. The course requirements must be fulfilled by taking the required core courses and such additional elective courses as needed. For students with a veterinary or medical degree from an accredited professional school there are 16 units of required course work. For all other students, there are 22 units of required course work. Moreover, students must take at least one research specific seminar previously approved by an adviser. When a CRN# is unavailable, the student must request special approval from the master adviser. At least 12 of the 30 units must be in graduate courses in the major field as defined by the graduate adviser and the major professor. Most of the additional units are obtained by taking research courses (XXX - 299) from the major professor or other collaborating faculty.

Students in the MS program may change the degree objective to PhD if they have outstanding progress and endorsement from their major professor. MS students wishing to change their degree objective from an MS to a PhD must complete the change of degree objective form which requires signature by a faculty with admissions authority, and the student must also submit a letter from their major professor (mentor) supporting the change. Students should also note that they will have to fulfill all requirements for the PhD,
which may require taking additional courses and will require them to take the Qualifying Exam.

3). Course Requirements

Cores and Electives

Required didactic classes for all students include two in pathology (6 units total), one each in statistics (4 units), immunology (3 units), and ethics (1-2 units). In addition, each student must participate in a Group-Specific Seminar (1 unit), and a Research-Specific Seminar (1 unit). Students who have not received a degree from an accredited school of veterinary medicine or school of medicine are also required to take two additional courses in pathology (6 additional units); students with either DVM or MD degrees will have already completed comparable courses. The list of required Core courses is presented in Attachment #1. Often students take more than the minimum number of units required (12 units per quarter) through electives that accommodate special interests of the student within the broad field of comparative pathology. Examples of fields of specialization in which electives may be taken are virology, infectious disease, immunology, pulmonary biology, environmental disease, neurobiology, developmental and stem cell biology, cancer biology, toxicology, cell biology and molecular pathobiology. There is a wide latitude in the electives that the students may pursue, although the electives must be consistent with the student’s thesis project and be approved by the student’s graduate adviser.

After admission to the GGCP program and prior to the start of classes in the Fall quarter, each student must meet with his/her major professor and graduate adviser to develop a plan of course work to achieve the student’s objectives and satisfy the degree requirements. Usually, all didactic course requirements can be completed within one year. The plan of study will be reviewed and approved by the student’s graduate adviser. Any subsequent changes must be discussed with, and approved in advance by, the student’s graduate adviser.

4). Special Requirements

There are no special requirements for completion of the MS degree.

5). Committees

a) Admissions Committee: The committee is composed of 4 appointed members of the graduate group, the Group Master Adviser and the Group Chair. Applications materials are reviewed (on line and printed documents from GARD) by all members of the admissions committee prior to meeting to make final decisions and recommendations for admission. Criteria used include, but are not limited to, academic records, GRE scores, letters of recommendation and a personal statement. The Master Adviser holds admission authority and following
the Admissions Committee meeting, the Adviser proceeds with the online procedures as outlined by Graduate Studies for making recommendations for admission or denial to the Dean of Graduate Studies.

b) Course Guidance: Admitted students will be assigned a graduate advisor and the student and advisor will meet prior to the start of classes to plan the student’s course of study. In addition to the required core courses the student’s graduate adviser will recommend additional elective and seminar courses based on the student’s proposed thesis project and prior academic course work. Once the core course requirements are completed, students can take additional classes as needed, although, generally, students fulfill the minimum number of units with a research class (299). Students are required to have their graduate adviser sign the annual progress report of satisfactory progress, in addition to obtaining the signature of the student’s major professor.

c) Thesis Committee: Thesis committee consists of the student’s mentor, who serves as chair of the thesis committee, and two other members who do not have to be members of the Graduate Group in Comparative Pathology. In consultation with the student’s major professor, the student proposes the composition of the committee. The student’s graduate adviser must approve the committee members, prior to submission to the Dean of Graduate Studies for final approval. This takes place when the application for candidacy for the degree of Master of Science is submitted. The student is expected to meet with their thesis committee, at least once a year, generally just prior to submission of the student’s annual progress report.

6). Advising Structure and Mentoring

Graduate Advisers: All graduate advisers of the group are appointed in accordance with Graduate Council policies and Graduate Studies procedures to serve as deputies in matters affecting individual graduate students and their academic programs. The graduate adviser sets the course outline for the student and provides guidance on elective courses relevant to the student’s thesis. In doing so the graduate adviser ensures that all requirements of the Master’s Degree are met. Students are assigned to a graduate adviser based on either the adviser’s expertise in the student’s proposed field of study or by physical proximity of the advisers office to the student’s lab.

Master Adviser: The Master Adviser of the group is appointed by the Dean of Graduate Studies to serve as a deputy in matters affecting individual graduate students and their academic programs. The Master Adviser oversees the individual Graduate Advisers and provides uniformity in student advising. The master adviser maintains records of each student’s performance. Forms and petitions used by graduate students must be signed by an adviser or the Master Adviser. The Master Adviser makes recommendations regarding admission on behalf of the Admissions Committee of the GGCP to the Dean of Graduate Studies.
Major Professor: The major professor is the faculty member who provides detailed supervision of a student’s thesis project and whose laboratory is usually the setting for most of the student’s research activities. The major professor advises on details of course work and other aspects of the academic program that are tailored to suit the individual student’s programmatic needs and career goals. The major professor is the chair of the thesis committee.

7). Advancement to Candidacy

The student must file an Application for Advancement to Candidacy with Graduate Studies after the completion of at least one-half of the course requirements for the degree and at least one academic quarter before completion of all degree requirements.

Students must have the candidacy application signed by the thesis chairperson (major professor) and the student’s graduate adviser. At the time the student submits the form to the master adviser, there should be an accompanying letter from the major professor recommending names of two other faculty members to serve as additional members of the three-person thesis committee.

8). Thesis Requirements

The thesis is on a subject chosen by the candidate and must contain an original contribution to knowledge on that subject. Generally the subject of the thesis is an extension of the type of research conducted by the major professor. The thesis committee guides the candidate’s research and approves the thesis before it is submitted to Graduate Studies for Approval.

The candidate must present an outline of the proposed research to the thesis committee at the beginning of the research program and must keep them informed regularly on progress and any changes in direction. It is recommended that the candidate and major professor meet, at least once a year, with other members of the thesis committee in order to discuss progress, changes, etc.

The graduate group leaves to the discretion of the thesis committee whether the candidate is required to defend the thesis in a formal oral examination. The group does, however, strongly recommend that at least one manuscript derived from the thesis be submitted for publication in a peer-reviewed journal before the thesis is finally approved. The student must present an exit seminar on some part of his or her research as a final step in the completion of the thesis process.

Detailed instructions for the layout of the thesis can be obtained from Graduate Studies.

The graduate group recommends the thesis be written in chapter format with a general introduction, complete literature review, one or more chapters consisting of journal-ready manuscripts and overall conclusions. Material from recently published manuscripts can be used in the body of the thesis. Co-authored material can be used as part of the thesis,

Comparative Pathology degree requirements
providing the candidate’s own research is the principal source of the material presented. The student should clearly indicate which portion(s) of the co-authored manuscript was performed by the student.

An Exit Seminar is required. Satisfaction of this requirement should be verified by the Thesis Committee Chair.

9.) Typical Time Line and Sequence Of Events

Students can complete all of their course work requirements within one year and theoretically, could complete their thesis within that time frame, if the thesis committee approves. However, Master’s degree students typically fulfill their thesis requirement in two to three years (six to nine academic quarters).

Students must have a cumulative 3.0 GPA and a B- (or Satisfactory in an S/U graded course) or better in all of the didactic core courses. Any deficiencies in course work must be rectified with a grade of B- (or Satisfactory) or better prior to the submission of the thesis.

Students without a DVM or MD degree from an accredited professional school must also complete the two pathology courses PMI 298 and PMI 275 (See Attachment # 1).

The general schedule of events is:

   a. Admission to the GGCP Program

   b. Meeting with Graduate Adviser to prepare course schedule prior to the start of classes.

   Year 1:

   • Completion of core courses, electives, and additional courses identified by graduate adviser. Since MPM 402, one of the options to fulfill the statistics requirement, is taught during Summer Session II, students can enroll in the class prior to the Fall quarter. Alternatively, the students can enroll in this course during the second summer quarter at the end of their first year.

   • Submission of thesis committee application and filing of advancement to candidacy application: This can occur at the end of the Winter quarter.

   • Initiation of thesis research project.

   Years 2 and 3
• Completion of core course requirements and correction of course deficiencies, if necessary.

• Enrollment in additional elective courses, as needed.

• Completion of thesis research.

• Completion of thesis and approval by thesis committee.

• Exit Seminar.

10). Sources of Funding

Students can be potentially supported financially from funding from their major professor, training grants, internal GGCP funding (block grant), private foundations, and/or their own source of funding.

11). PELP and Filing Fee Status

Students are eligible to apply for the Planned Educational Leave Program (PELP), and after advancement to candidacy, can apply for filing fee status. Information about PELP and Filing Fee status can be found in the Graduate Student Handbook: http://www.gradstudies.ucdavis.edu/students/handbook/GraduateStudentGuideJuly2008.pdf
Ph.D. Degree Requirements

1). Admissions Requirements

Admission to the GGCP is generally open only for the Fall Quarter. It is the applicant's responsibility to ensure that all application materials are received by the on-line application system by the deadline. See admission deadlines at http://www.gradstudies.ucdavis.edu/programs/program_detail.cfm?id=28

Because the program in comparative pathology is diverse, applicants must contact and obtain sponsorship of a faculty member in the group who is willing to serve as their major professor should they be admitted. If an applicant has not identified a faculty member to serve as their sponsor, we will assist them with this process. Applicants should contact Comparative Pathology well in advance of the application deadline and provide a CV as well as clearly stated interests and goals in the field of Comparative Pathology.

The applicant should also ask the faculty sponsor to write to the master adviser stating his/her willingness to serve as major professor if the applicant is accepted into the graduate program. This letter should also state that funding/fees are available.

It is most important to note that admission to the Group requires acceptance by a major professor in the group in the applicant's desired field of specialization before a recommendation for admission is forwarded to the Office of Graduate Studies.

The student's sponsoring major professor must be a member, or willing to become a member, of the Graduate Group in Comparative Pathology.

GPA of 3.0 or greater (on a 4.0 scale) for undergraduate courses is required. Applicants with a professional degree from an AVMA-accredited veterinary school or an AMA-accredited medical school must have a GPA of 3.0 or greater for courses taken during the first two years of the professional curriculum. GRE scores from the general test (verbal, quantitative, and analytical) must be submitted. Applicants who have received a DVM or MD from an accredited professional school, who have remained in a professional or post-professional capacity are not required to submit GRE scores since similar standardized test scores were submitted for admission to the professional school. International students who have not studied at an institution where English was the language of instruction must obtain a score of 550 (written), 213 (computer based), or 68 (iBT, internet-based) or more on the TOEFL before applying for admission.

Undergraduate Preparation For Admission

For applicants without a professional medical degree, a strong background in biological sciences is essential. It is recommended that applicants have completed course work in the areas of inorganic and organic chemistry, biology, and biochemistry. It is recommended that applicants take some additional biomedical/life sciences courses in anatomy, histology, embryology, cell biology, bacteriology, virology, parasitology, immunology and hematology.
Potential comparative pathology students who do not have a veterinary or medical degree will be notified by the Master Adviser of any prerequisites to be taken before they are eligible to enroll in the required core courses. They may be accepted into the program provided their limited deficiencies can be corrected prior to advancement to candidacy.

Students accepted for the MS degree will not automatically be accepted into the PhD degree program. However, if the student and the major professor agree that the student's scholastic achievements and research is more appropriate for a PhD degree, the student may apply for transfer to the PhD program without completing the MS degree. The student may be required to complete additional course work for the PhD degree, in addition to fulfilling all other PhD requirements.

The minimum residency requirements for the PhD degree is six quarters, but the amount of time spent by most students in this program is five to six years.

2). Dissertation Plan

The degree of Doctor of Philosophy is given under dissertation Plan B.

3). Course Requirements

The list of required Core courses is presented in Attachment # 2.

The student is required to take a minimum of 28 quarter units of course work, including XXX - 299 (research) units.

All of the didactic course requirements can be completed within one year. Required didactic classes for all students include:
  • two in pathology (6 units total)
  • two in statistics (8 units total), and
  • one each in immunology (3 units) and ethics (1 – 2 units).

In addition, each student must participate in two Group-Specific Seminars (PMI 290, 1 unit each), and two Research Specific seminars (1 unit each).

Students who have not received a degree from an accredited school of veterinary medicine or school of medicine are required to take the two additional courses in pathology (PMI 298 – General Pathology (2units) and PMI 275 (4 units), since students with either a DVM or MD degree will have completed comparable courses.

In some cases, additional course work is recommended for those students who do not have an adequate background in Cell Function, Molecular Genetics, and/or Molecular Biology. Specific classes, which address these areas, include BIS 104 (3 units), MCB 121
(3 units) MBC 161 (3 units), and ANG 111 (4 units). Other more appropriate electives may be recommended, depending on the student’s proposed thesis research.

Often students take more than the minimum number of units required (12 units per quarter) through electives that accommodate special interests of the student within the broad field of comparative pathology. Examples of fields of specialization in which electives may be taken are virology, infectious disease, immunology, pulmonary biology, environmental disease, neurobiology, developmental and stem cell biology, cancer biology, toxicology, cell biology and molecular pathobiology. There is a wide latitude in the electives that the students may pursue, although the electives must be consistent with the student’s dissertation project and be approved by the student’s graduate adviser. The major professor and the advisor provide the student with guidance in selecting appropriate elective courses.

Students must take at least two research specific seminars previously approved by an adviser. When a CRN# is unavailable, the student must request special approval from the master adviser. Additional elective courses are taken as determined by the field of specialization and the need to prepare for the qualifying examination.

After admission to the GGCP program and prior to the start of classes in the Fall quarter, each student must meet with his/her major professor and graduate adviser to develop an approved plan of course work to achieve the student’s objectives and satisfy the degree requirements. Any subsequent changes must be discussed with, and approved in advance by the student’s graduate adviser.

Students who are accepted into the PhD program after completing the MS degree in Comparative Pathology must take those core courses that they did not take for the MS. This includes a second course in Statistics (MPM 403, 4 units), a second Group-specific seminar (PMI 290, 1 unit), and a second Research specific seminar (1 unit). MS students who completed all the PhD course requirements are not required to take any other courses other than research (XXX - 299) and elective courses necessary for greater understanding of their field of specialization or to further prepare for the qualifying examination.

Students entering the PhD program after finishing an MS degree in another institution may be allowed to waive some required courses if the adviser determines that the courses taken at that previous institution are equivalent to the Comparative Pathology required core courses. It is possible, although highly unlikely, that a student who has obtained an MS degree at another institution could have courses that would be sufficiently comparable to the Comparative Pathology PhD course work to waive all the required courses. However, graduate students must have a GPA to advance to candidacy. Therefore, the student is required to take at least one graded course and obtain a GPA of 3.0 or greater. Students admitted to the PhD program after having finished an MS degree are required to take 36 additional units, (three quarters) to fulfill the residency requirements. Much of this requirement can be met by taking research (XXX - 299) courses.
4). Special Requirements

There are no special requirements for the completion of the PhD degree. Students are made aware of the nine-quarter rule regarding employment and referred to directive #92-122.

5). Committees

a). Admissions Committee: The committee is composed of 4 appointed members of the graduate group, the Group Master Adviser and the Group Chair. Applications materials are reviewed (on line and printed documents from GARD) by all members of the admissions committee prior to meeting to make final decisions and recommendations for admission. Criteria used include but are not limited to academic records, GRE scores, letters of recommendation and a personal statement. The Master Adviser holds admission authority and following the Admissions Committee meeting s/he proceeds with the online procedures as outlined by Graduate Studies for making recommendations for admission or denial to the Dean of Graduate Studies.

b). Course Guidance: Admitted students will be assigned a graduate advisor and the student and advisor will meet prior to the start of classes to plan the student’s course of study. In addition to the required core courses the student’s graduate adviser will recommend additional elective and seminar courses based on the student's proposed dissertation project and prior academic course work. Once the core course requirements are completed, students can take additional classes as needed, although, generally, students fulfill the minimum number of units with a research class (299). Students are required to have their graduate adviser sign the annual progress report of satisfactory progress, in addition to obtaining the signature of the student’s major professor.

6). Advising Structure and Mentoring

Graduate Advisers: All graduate advisers of the group are appointed in accordance with Graduate Council policies and Graduate Studies procedures to serve as deputys in matters affecting individual graduate students and their academic programs. The graduate adviser sets the course outline for the student and provides guidance on elective courses relevant to the student's dissertation. In doing so the graduate adviser ensures that all requirements of the Ph.D. degree are met. Students are assigned to a graduate adviser based on either the adviser’s expertise in the student’s field of study or by physical proximity of the advisers office to the student’s lab.

Master Adviser: The Master Adviser of the group is appointed by the Dean of Graduate Studies to serve as a deputy in matters affecting individual graduate students and their academic programs. The Master Adviser oversees the individual Graduate Advisers and provides uniformity in student advising. The Master Adviser maintains records of each student’s performance. Forms and petitions used by graduate students must be signed by an adviser or the Master Adviser. The Master Adviser makes recommendations regarding
admission on behalf of the Admissions Committee of the GGCP to the Dean of Graduate Studies.

**Major Professor:** The major professor is the faculty member who provides detailed supervision of a student’s dissertation project and whose laboratory is usually the setting for most of the student’s research activities. The major professor advises on details of course work and other aspects of the academic program that are tailored to suit the individual student’s programmatic needs and career goals. The major professor is the chair of the dissertation committee. Mentoring guidelines followed by the GGCP can be found at [http://www.gradstudies.ucdavis.edu/gradcouncil/mentoring.pdf](http://www.gradstudies.ucdavis.edu/gradcouncil/mentoring.pdf)

When the admitted student first meets with his/her graduate adviser prior to the start of classes, the graduate adviser recommends that the student form a guidance committee composed of the student’s major professor and two other faculty members who do not have to be members of the GGCP. The goal of the guidance committee is to monitor the student’s progress up to the point of passing the qualifying examination. The guidance committee is expected to assess the quality of the student’s proposed thesis proposal prior to the submission of the proposal to the qualifying examination committee. The student should meet with the guidance committee at least once a year during the first and second years.

7). **Advancement to Candidacy**

The Application for Advancement to Candidacy is sent to the candidate after the qualifying examination has been passed. It must be signed by the major professor (chair of the dissertation committee) and student’s graduate adviser. When the form is submitted for the adviser’s signature, it should be accompanied by a letter from the major professor recommending two faculty members to serve as the other members of the dissertation committee. Normally the dissertation committee is made up of three faculty members (major professor and two faculty members.) Committees may be composed of more than three members and qualified outside scientists may also serve provided they are justified by the major professor, graduate adviser and forwarded for final approval by the Dean of Graduate Studies.

8). **Dissertation Requirements**

The student must pass a qualifying examination before advancement to candidacy. The student must satisfy the core course requirements and have a GPA of 3.0 or greater before taking this examination. The student must take the examination by the end of the second year in the program. Exceptions to this requirement will be evaluated by the Executive Committee of the GGCP. However, the QE must be taken prior to the end of the Spring Quarter of Year 3, in accordance with Graduate Studies policies.

In addition to defending general pathology, the student must defend two fields of specialization within the broad scope of comparative pathology (see examples of fields of specialization listed in General Course Work Requirements.) Of these two other areas of
defense, one must be in a broad topic (such as virology, immunology, vascular biology, etc.) while the other can be more narrow in scope (such as herpesvirology, mucosal immunology, vascular biology in the context of inflammation).

In consultation with the major professor, the student prepares the GGCP Qualifying Examination Request form (attachment #3), which includes a list of ten faculty members who would be suitable members of the qualifying examination committee. The major professor may not serve on this committee. The adviser uses these names in recommending the membership of the five-person committee to the Office of Graduate Studies. The qualifying examination committee is appointed in accordance with Graduate Council policy DDB 80. Graduate Council, B1 and Graduate Studies procedures. It is the responsibility of the student to contact the Chair of the committee and, in consultation with the entire committee, arrange a time for the examination.

Generally, the qualifying examination is oral and includes:

1. Examination of dissertation research proposal.
2. Examination in general pathology.
3. Examination of specialty fields.

By mutual consent of the qualifying examination committee and the candidate, a portion of the examination may be written.

A dissertation research proposal must be prepared by the student and distributed to the committee at least one week prior to the examination. If the student has been admitted to a Designated Emphasis (DE), the Director of the DE must also approve the QE application before it is submitted. One member of the DE must be part of the qualifying examination committee. The proposal is to include background information and significance, hypothesis to be tested, specific aims and a brief discussion of the experimental methods. It should not exceed four typed pages, not including references.

Students are evaluated on their general knowledge and background related to their dissertation proposal, with special emphasis placed on scientific reasoning, knowledge of relevant literature, experimental design, interpretation of expected results, and alternative experimental designs. For the portion of the examination related to the specialty topics, students are expected to demonstrate a good working knowledge of the basics of general pathology, and the two other specialty topics.

The dissertation committee that guides the student’s research and preparation of the dissertation is not formally appointed until the student has successfully completed the qualifying examination and advances to candidacy. The dissertation committee consists of the student’s mentor, who serves as chair of the dissertation committee, and two other members who do not have to be members of the Graduate Group in Comparative Pathology. The student’s graduate adviser must approve the dissertation committee members, prior to submission of the application for candidacy for the degree of doctor of philosophy Plan B, to the Dean of Graduate Studies for final approval. The student is
expected to meet with their dissertation committee, at least, once a year, generally just prior to submission of the student’s annual progress report.

The dissertation is on a subject chosen by the candidate and must contain an original contribution to knowledge on that subject. Generally the subject of the dissertation is an extension of the type of research conducted by the major professor. The dissertation committee guides the candidate's research and approves the dissertation before it is submitted to the Graduate Studies.

The candidate must present an outline of the proposed research to the dissertation committee at the beginning of the research program and must keep them informed regularly on progress and any changes in direction. It is recommended that the candidate and major professor meet, at least once a year, with the other members of the dissertation committee in order to discuss progress, changes, etc.

The graduate group leaves to the discretion of the dissertation committee whether the candidate is required to defend the dissertation in a formal oral examination. The group does, however, strongly recommend that at least one manuscript derived from the dissertation be submitted for publication in a peer-reviewed journal before the dissertation is finally approved.

Detailed instructions on the form for the dissertation can be obtained from Graduate Studies.

The graduate group recommends that the dissertation be written in chapter format with a general introduction, complete literature review, one or more chapters consisting of journal-ready manuscripts and overall conclusions. Material from recently published manuscripts can be used in the body of the dissertation. Co-authored material can be used as part of a dissertation, providing the candidate is the senior author and principal source of the material presented. The student should clearly indicate which portion(s) of the co-authored manuscript was performed by the student.

An exit seminar is required. Satisfaction of this requirement should be verified by the Dissertation Committee Chair.

9). Normative Time and Time to Degree:

The minimum registration time required by the university is six regular quarters, but the normative time for students with a PhD degree objective is 5 to 6 years.

10). Typical Time Line and Sequence of Events

Students can complete all of their course work requirements within one year. Students must have a cumulative 3.0 GPA and a B- grade or better in all of the didactic core courses. Course deficiencies at the time of admission to the program must be completed with a grade of B- (or Satisfactory in an S/U graded course) or better prior to the
submission of the dissertation. Students without a DVM or MD degree from an accredited professional school must also complete the two pathology courses PMI 298 and PMI 275 (See Attachment # 1).

The general schedule of events is:

a. Admission to the GGCP Program

b. Meeting with Graduate Adviser to prepare course schedule prior to the start of classes.

**Year 1:**

- Completion of core courses, electives, and additional courses identified by graduate adviser. Since MPM 402, one of the options to fulfill the statistics requirement, is taught during Summer Session II, students can enroll in the class prior to the Fall quarter. Alternatively, the students can enroll in this course during the second summer quarter at the end of their first year. This will require that the second Statistics requirement (MPM 403) be taken in the Fall quarter of the second year.

- By 7 months, the student meets with the adviser to go over the student’s progress and discuss the elements of the qualifying examination.

**Year 2:**

- By 15 months, the student should have met with the adviser to identify members to serve on the qualifying committee.

- Completion of core course requirements and correction of course deficiencies, if necessary.

- Enrollment in additional elective courses, as needed.

- Submission of formal “Application for Qualifying Examination” to Graduate Studies.

- Take and successfully pass the qualifying examination.

- Initiation of research project.

**Years 2 and beyond:**

- Completion of research project and composition of dissertation.

- Approval of dissertation by the dissertation committee.
• Exit Seminar.

• Submission of formal dissertation to Graduate Studies.

11). Sources of Funding

Students can be potentially supported financially from funding from their major professor, training grants, internal GGCP funding (block grant), and/or private foundations.

12). PELP and Filing Fee Status

Students are eligible to apply for the Planned Educational Leave Program (PELP), and after advancement to candidacy, can apply for filing fee status.
# MS
## REQUIRED COURSES IN COMPARATIVE PATHOLOGY

### CELL BIOLOGY

May have to take one or more of the following (based on the student’s academic adviser’s evaluation of the student’s prior course work and area of research):

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>BIS 104 - Regulation of Cell Function</td>
<td>(3)</td>
</tr>
<tr>
<td>MCB 121 - Molecular Biology of Eukaryotic Cells</td>
<td>(3)</td>
</tr>
<tr>
<td>MCB 161 - Molecular Genetics</td>
<td>(3)</td>
</tr>
<tr>
<td>ANG 111 - Molecular Biology Laboratory Techniques</td>
<td>(4)</td>
</tr>
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### PATHOLOGY

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>PMI 298* - General Pathology (Lecture Portion of VMD 452)</td>
<td>(2)</td>
</tr>
<tr>
<td>PMI 275* - Comparative Pathology</td>
<td>(4)</td>
</tr>
<tr>
<td>PMI 285 - Cellular Basis of Disease</td>
<td>(3)</td>
</tr>
<tr>
<td>MMI 280 - Molecular Pathology of Human and Animal Diseases</td>
<td>(3)</td>
</tr>
</tbody>
</table>

*These courses are requirements only for those students without a veterinary or medical degree from an AVMA- or AMA-accredited school in the United States, or who are not concurrently enrolled in the UC Davis School of Veterinary Medicine or School of Medicine.

### STATISTICS

(either 1 of the following two classes will satisfy the Statistics requirement for the MS degree):

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>STA 100 - Applied Statistics for Biological Science OR</td>
<td>(4)</td>
</tr>
<tr>
<td>MPM 402 - Medical Statistics I</td>
<td>(4)</td>
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</table>

### IMMUNOLOGY

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>PMI 270 - Advanced Immunology</td>
<td>(3)</td>
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### ETHICS

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMI 250 - Philosophy and Ethics of Biomedical Science OR</td>
<td>(1)</td>
</tr>
<tr>
<td>PLP 298 - Ethics in Scientific Research</td>
<td>(2)</td>
</tr>
</tbody>
</table>

### GROUP SPECIFIC SEMINAR SERIES

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMI 290 - Seminar (First seminar)</td>
<td>(1)</td>
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</tbody>
</table>

### RESEARCH SPECIFIC SEMINARS

One required (1)
PhD
REQUIRED COURSES IN COMPARATIVE PATHOLOGY

CELL BIOLOGY

May have to take one or more of the following (based on the student’s academic adviser’s evaluation of the student’s prior course work and area of research):

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIS 104</td>
<td>Regulation of Cell Function</td>
<td>(3)</td>
</tr>
<tr>
<td>MCB 121</td>
<td>Molecular Biology of Eukaryotic Cells</td>
<td>(3)</td>
</tr>
<tr>
<td>MCB 161</td>
<td>Molecular Genetics</td>
<td>(3)</td>
</tr>
<tr>
<td>ANG 111</td>
<td>Molecular Biology Laboratory Techniques</td>
<td>(4)</td>
</tr>
</tbody>
</table>

PATHOLOGY

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMI 298*</td>
<td>General Pathology (Lecture Portion of VMD 452)</td>
<td>(2)</td>
</tr>
<tr>
<td>PMI 275*</td>
<td>Comparative Pathology</td>
<td>(4)</td>
</tr>
<tr>
<td>PMI 285</td>
<td>Cellular Basis of Disease</td>
<td>(3)</td>
</tr>
<tr>
<td>MMI 280</td>
<td>Molecular Pathology of Human and Animal Diseases</td>
<td>(3)</td>
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STATISTICS

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<tbody>
<tr>
<td>MPM 402</td>
<td>Medical Statistics I</td>
<td>(4)</td>
</tr>
<tr>
<td>MPM 403</td>
<td>Medical Statistics II</td>
<td>(4)</td>
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</table>

IMMUNOLOGY

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ETHICS

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GROUP SPECIFIC SEMINAR SERIES

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<tr>
<th>Course</th>
<th>Description</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMI 290</td>
<td>Seminar (First seminar)</td>
<td>(1)</td>
</tr>
<tr>
<td>PMI 290</td>
<td>Seminar (Second seminar)</td>
<td>(1)</td>
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RESEARCH SPECIFIC SEMINARS

Two required (1)
GGCP
Qualifying Examination Request Form

Instructions:
1) Student must complete Section A.
2) Major professor will complete Section B with student (don’t forget the Major Professor’s SIGNATURE)
3) After completing this form, take it to your Advisor who will then choose the 5 faculty members which will serve on the QE committee by ✔ mark and SIGN next to his/her name in section A.
4) Take the completed form to Darlene Flemming in the Comp Path Office (Darlene Flemming, Comp Path, c/o VM PMI, 5215 Vet Med 3A).
5) Darlene will prepare the required paperwork and forward it to Graduate Studies for the Dean’s Approval.
6) Once approved, Graduate Studies will email the approval to the student.

Section A

Date:________________________________________

To:  __________________________________________

(name of Advisor)

From: _________________________________________

(name of Major Professor)

Student Information:

First Name ___________________________________ Middle Name __________ Last Name __________ Student Email Address __________

Current Mailing Address __________________________________________

Student ID __________________________________

City ______________________________ State __________ Zip code __________

Section B

The applicant is prepared to take the Qualifying Examinations for the doctoral degree in Comparative Pathology. The three areas of defense (subjects that the applicant will be examined) are:

1) General Pathology (required)
2) __________________________________________
3) __________________________________________
The approximate date the applicant plans to take his/her

Month ___________ Day ________ Year ____________

## Faculty Members

List 10 potential faculty members to serve on the committee. The student should contact these individual faculty members to determine if they are willing to serve if chosen. (You may not include your major professor in this list)

### Preferred Faculty Members:

*(Please write your choice for **Chair** of the QE in the shaded portion)*

<table>
<thead>
<tr>
<th>☑️</th>
<th>Name (First, Middle Initial, Last)</th>
<th>Academic Title</th>
<th>Home Department</th>
<th>List Area(s) of defense &amp; faculty member’s related expertise</th>
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