

**Microbiology and Pathobiology
(MicroPath)
Graduate Program**

Policies and Procedures

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Program Description

The Microbiology and Pathobiology (MicroPath) Graduate Program (MGP) provides post-graduate education in the basic science disciplines, including parasitology, microbiology, immunology, and pathology, embracing an integrative approach to science. Students will develop a broad academic foundation with a concentration in at least one science discipline. The general focus will be on microbiology and microbial pathogens of domestic animals, humans and plants with emphasis on infectious diseases and host responses. Graduates will find employment in academic, government, and private institutions.

Faculty

Faculty with terminal degrees and full-time appointments in the Department of Veterinary Science and Microbiology (VSM) will constitute the core MGP faculty. Other departmental faculty and those from other UA departments and colleges with academic credentials and interests appropriate to the MGP will be welcomed to join the MGP faculty. Such faculty should request membership and submit a current *curriculum vita* to the VSM department head. Applications for membership will be reviewed by the Microbiology and Pathobiology Graduate Program Committee (MGPC) and will be presented for approval of the department head, and the Dean of the Graduate College. Candidates for membership must have a record of an extramurally-funded research program and ability to effectively mentor students. The MGPC will review the activities of all program faculty at least triennially. Mentoring and support of graduate students, service on Graduate Advisory Committee(s), and teaching in the MGP curriculum will be considered in such reviews. Members from outside VSM will be allowed a vote in program matters if they meet the criteria for MGPC membership as outlined below.

MGP faculty meetings will be held at least annually to discuss program-related matters, to plan activities, and to conduct business. Additional meetings will be held as needed. All recommendations for action will pass with a simple majority vote of faculty present. The VSM department head will have final MGP approval authority, and may bring matters to the VSM departmental faculty for discussion as appropriate.

Administration of the MicroPath Graduate Program

The MGPC will be composed of five members, serving staggered 3-year terms. MGP faculty eligible to serve on this committee will include: 1) those who are mentoring and supporting MGP students, 2) those whose MGP students have graduated within the previous year, and have confirmed commitments to support and mentor MGP students in the coming year. The MGPC will ideally include four VSM faculty members and one member from an external department, selected at the annual MGP faculty meeting, by random drawing from intra- and extra-departmental pools, respectively, of eligible faculty. The VSM departmental and extra-departmental membership on the MGPC may change upon the recommendation of the MGPC to the VSM department head, with consideration of the proportional enrollment of MGP students being supported by extra-departmental faculty. In the absence of extra-departmental faculty who meet the criteria for membership and wish to serve on the MGPC, VSM faculty will comprise the committee's entire membership. The MGPC will elect a Chair to a 3-year term, which will be

renewable by agreement of the faculty and the incumbent. Upon election as Chair, he/she will remain on the MGPC until completion of this 3-year term, regardless of the terms of his/her initial appointment to the committee. The MGPC will administer the program on behalf of the department head and faculty of VSM. It will oversee all aspects of program function, presenting committee actions for approval or information of program faculty; final signatory authority will rest with the department head.

The MGPC will meet at least bi-monthly, from August to May, and in summer as needed. Meeting announcements and agendas will be distributed to all MGP faculty in advance and all MGP faculty will be invited to attend. Minutes of meetings will be circulated to all members.

A Graduate Program Advisor, elected from within the MGPC, will serve as the central academic resource for current and prospective students, and will be responsible for monitoring student progress toward degree completion. This individual will act as an ombudsman on behalf of students with grievances. However, students mentored by this individual will seek such assistance from the Chair of the MGPC.

The Program Assistant will monitor student progress each semester and communicate with students and major professors to assure timely completion of program requirements and periodic progress reports. The MGPC will review the Program Description annually and update it in accordance with Graduate College policies, maintain and update program informational and recruitment materials, oversee the program website, and recruit faculty participation in preparation of proposals for training grants or other programs that will enhance the MGP. The MGPC will prepare all reports and informational materials required by the Graduate College or department, and will make recommendations to the department head regarding admission of applicants to the MGP.

Application Process

Application must be made to both the Graduate College (online at <https://apply.grad.arizona.edu>) and the MGP. The MGP application requires the following:

- Copy of the Graduate College application
- MicroPath Graduate Program application, available at <http://microvet.arizona.edu>
- GRE scores for the general aptitude test
- Three letters of recommendation with confidentiality waivers
- A personal letter of intent
- Official copies of all college and university transcripts

These items are mailed to:

Graduate Program Assistant
MicroPath Graduate Program
Department of Veterinary Science and Microbiology
The University of Arizona
P.O. Box 210090

1117 E Lowell Street
Tucson, AZ 85721

Students desiring a pre-application assessment of acceptability to the program may contact the Program Assistant or any of the Program faculty. All department level application and post-application materials and correspondence should be routed directly through the MGP Program Assistant in the VSM department office. The Program Assistant will assist candidates with the application process, as needed. The Program Assistant can be contacted at 520-621-4466 or by email at (separate email address, e.g. mgpassistant@email.arizona.edu).

Application Deadlines

For domestic applicants, the application must be received no later than April 1 to be considered for fall admission and November 1 for spring admission. International applications must be received no later than December 1 to be considered for fall admission.

Review of Applications

Summaries of all applications will be forwarded to all MGP faculty, and complete application files of specified applicants will be copied to them as requested. Faculty interested in and able to support a given student will inform the program assistant. Faculty statements of interest and student application materials will be reviewed by the MGPC in a timely manner each semester. The MGPC will vote to admit or to deny admission, and final approval will be by the department head. Evaluation of applicants will be based upon the following criteria:

1. Content of undergraduate transcripts
2. Grade-point average. The GPA must be ≥ 3.0 on scale of 4.0 for the last 60 undergraduate or 12 graduate credit hours, or include completion, as a non-degree student, of 12 h of ≥ 500 level coursework with GPA ≥ 3.25)
3. Graduate Record Examination (GRE) scores should be greater than the 50th percentile, or approximately 550 on each of the verbal and quantitative section, and approximately 4.5 for the analytical writing section
4. Research experience or graduate degrees
5. Letters of recommendation
6. The letter of intent
7. Availability of physical and financial support by a program faculty member
8. TOEFL score ≥ 550 (≥ 213 CAT)

Applicants not meeting these minimum standards may be considered on an individual basis. The Medical College Admission Test (MCAT) may be substituted for the GRE. Applicants for the Accelerated Master's Program will not be required to take the GRE.

Students must have adequate preparation in the basic sciences, tailored to the greatest extent possible to their specific objectives. Deficiencies, as determined by the Graduate Advisory Committee (GAC), should be removed during the first year of graduate study. The student's GAC will determine if such coursework will contribute to completion of degree requirements.

There are no specific undergraduate course prerequisites, but most students admitted will have earned a BS degree or equivalent in a natural science and completed prerequisites that will allow enrollment in major and minor coursework. Students admitted to provisional status and completing an initial 9 credit hours of graduate coursework with ≥ 3.0 GPA will be advanced to regular status.

The VSM department head will review MGPC recommendations for admission or non-admission. Applicants will be notified by the Program Assistant when approved for admission. Notice of admission will include any special conditions of admission, including amelioration of deficiencies.

Assignment to Assistant/Associate Categories

Criteria for assignment of graduate students to the Graduate Assistant, Associate I or II levels are as follows:

Graduate Assistant Level

- Master's student with < 30 credit hours
- PhD student without a Master's degree, and with less than 30 credit hours

Graduate Associate I Level

- PhD student without a Master's degree, and with ≥ 30 credit hours
- PhD student with a Master's degree

Graduate Associate II Level

- PhD students who have passed the comprehensive doctoral examination, and have ≥ 30 credit hours

Change of Status

Students who change their status during a semester or over the summer will be paid at the lower rate until the beginning of the next semester. Specifically:

- If the student's status changes during fall semester or the summer, payment at the higher rate will commence at the start of spring semester.
- If the student's status changes during spring semester, payment at the higher rate will commence at the start of fall semester.

Program Transfers

Students currently enrolled in other graduate programs at The University of Arizona may transfer to the MicroPath Graduate Program. The faculty member with whom the student wishes to work

will notify the MGPC of the desired transfer and of availability of financial and facility support. MGPC may recommend admission or request additional documentation, including any of the requirements noted above.

Individual Student Records

The Program Assistant will maintain a central file for each student. This will include records of progress toward program milestones, completion of degree requirements, and other documents referenced in this Program Description. Students and major professors will complete an annual progress report, in conjunction with a graduate committee meeting. Correspondence should be copied to the Program Assistant for inclusion in the student's file.

Graduate Assistantships

Graduate assistantships funded from CALS or central departmental sources are awarded competitively, with the amount of each stipend set by the department, in keeping with university policy. Applicants for assistantships will be rated on letters of recommendation, GPA, and scores on GRE, TOEFL, and SPEAK test (where appropriate). Previous teaching experience, knowledge of course content, and references of course instructors may also be considered when evaluating students for appointment as teaching assistants. Assistants must be enrolled for ≥ 10 units, maintain a GPA ≥ 3.0 , and make satisfactory progress toward the target degree.

Students employed as teaching assistants must also attend University orientations and the Graduate Assistant Teaching Orientation (GATO). Students are advised to check at least annually for current versions of Graduate College documents (<http://grad.admin.arizona.edu/admissions>) and guidelines.

Time Commitment, Holiday, Vacation and Sick Leave Policy

Competition for positions, particularly as faculty, is becoming more intense. Those who complete their graduate program with a firm grasp of their scientific discipline, a practical basis for obtaining and maintaining financial support of a research program, and a strong work ethic will be best situated for success. In addition, the shortest possible time to a degree is the optimum.

Students seeking an MS or PhD degree in the MGP should expect to invest a minimum of 40 hours per week in graduate study. This time includes any paid duties as a GTA or GRA, any classes attended for graduate program credit and laboratory research to be included in the student's thesis or dissertation. The majority of this time should be spent outside the classroom, performing thesis or dissertation research.

The holiday schedule available to graduate students is the same as that for faculty and staff: New Year's Day, Martin Luther King, Jr. Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day and the day after, and the Christmas closure.

Under University personnel policy, graduate students are appointed in a non-benefit accruing position, and as such do not formally accrue vacation or sick leave. Vacation leave should be arranged with the faculty mentor in advance. No sick leave will be formally assigned, but may be used as necessary, with approval of the faculty mentor.

Graduate Advisory Committees

GACs should be formed by the end of each student's second semester. For those seeking traditional, applied, or accelerated track MS degrees, the GAC will be composed of a minimum of three faculty, with no more than one member from outside the MGP. Committees for PhD students will comprise five members, including one from each minor department. PhD students may seek the appointment of ≤ 2 committee members from outside the program. Names of Committee members should be submitted to the MGPC as part of the Plan of Study, and filed in the Program Office following the student's first GAC meeting. The student and his/her GAC are required to meet annually, and semiannual meetings are recommended to assure adequate guidance. A record or minutes of all meetings should be submitted to the Program Assistant for the student's file.

The Plan of Study should be established at the first GAC meeting (student's second semester, see below).

Transfer Credit

Graduate level courses completed at another university, with a grade of "A" or "B," are transferable, upon approval of the student's GAC; however, these grades will not be included in computation of the student's overall GPA at UA. Transfer credit for those seeking the MS degree may not exceed 20% of the number of units required for the degree. No specific limitations on transfer units are placed upon those seeking the PhD degree; however, Graduate College policy requires that PhD students must complete ≥ 30 units in residence.

Study Programs

The MGP takes an integrated perspective on natural science disciplines, as reflected in the diversity of research emphases of the faculty. Maximum flexibility in planning programs of study for MS and PhD candidates is desirable, and no uniform core of coursework is required. Students will become accomplished in verbal and written communication through participation in departmental courses and seminars, and through presentations at local, national, and/or international meetings. Students will be encouraged to gain teaching experience by acting as teaching assistants, presenting lectures, or other teaching activities in departmental courses. The Plan of Study should be established at the first GAC meeting (student's second semester, see below). This will then be approved for the program by signature of the VSM department head and submitted to the Graduate College. A copy will be placed in the student's file.

Applied Track MS Degree

The core of required courses will include a total of ≥ 21 units in the following, taken as an undergraduate or graduate student:

Pathology (≥ 3 units)
Microbiology (≥ 6 units)
Immunology (≥ 3 units)

Students will complete ≥ 30 units of specified graduate coursework with an overall GPA ≥ 3.0 , including the following:

15 units in core classes, including ≥ 3 units in business
6-12 units of elective classes
1 unit of Seminar (VSC 696a) taken in the last semester as the thesis defense
At least 3 units of internship credits (VSC693) or research credits (VSC900)
3 units of MS report credits (VSC909)

The applied track MS degree terminates with a project, which may be an internship, followed by a report and defense of the project in a seminar format. All graded coursework must be completed by the end of the fourth semester. Courses numbered 693, 900 and 909 are not included in computation of GPA. A grade of D in any course will not count toward graduate credit, but is included in computation of GPA. All degree work must be completed within a 6-year period, with possible extension of one year under extenuating circumstances, although the applied track MS degree is usually completed in a period of two years.

Accelerated MS Degree

Applications will be accepted from students who have reached agreement with a faculty member to serve as mentor and who have applied to the Graduate College in the standard manner. The successful applicants will meet the following criteria:

1. Completion of ≥ 75 undergraduate units at the time of application and ≥ 90 undergraduate units at the time of entry into the program
2. A minimum GPA of 3.2
3. Completion of at least 12 undergraduate major credits at The University of Arizona
4. Completion or near completion of general education requirements

Students will be considered undergraduates until undergraduate requirements are completed and must take at least 12 of their graduate units while in graduate status. After admission to the AMP for the senior (or transition) year, the student may complete ≤ 12 units of graduate coursework that will apply toward both the BS and MS degrees. Students retain eligibility for undergraduate scholarships and are not eligible for graduate stipends. Students will be granted graduate status and be eligible for graduate assistantships. When requirements for the BS degree have been completed. Those who complete 12 graduate units, but not the undergraduate degree, will be considered as graduate students for financial aid and tuition purposes. They will no longer be

eligible for undergraduate scholarships, nor will they be eligible for graduate assistantships. Undergraduate requirements should be completed as early as possible, but must be completed at least one semester before receiving the MS degree,

MS Degree

The MS degree requires completion of advanced coursework and research in microbiology or another discipline within pathobiology. The MS degree is usually completed in two to three years, but must, by Graduate College policy, be completed in six years. A seventh year may be available under extenuating circumstances.

The degree program requires ≥ 30 units of specified graduate coursework with an overall GPA ≥ 3.0 , and includes the following:

- At least 15 units of graded coursework in the major
- At least 9 research units (MP900)
- 6 thesis units (MP910)

Students are required to enroll in VSC595a (Journal Club) for ≥ 2 (MS) or ≥ 4 (PhD) semesters. Students entering the program with a strong foundation of coursework in microbiology, pathology, epidemiology, parasitology, and/or other health science disciplines will have greater flexibility in preparing a plan of study within the program. An acceptable thesis and a final oral examination are also required. The candidate should generate sufficient data from the thesis research to write at least one full-length manuscript (not a note, brief communication, or review) suitable for publication in a refereed journal in the field of specialization. This manuscript must be submitted for consideration prior to the final examination, unless this is waived by agreement of the student's mentor and Graduate Advisory Committee.

All graded coursework should be completed by the end of the fourth semester. Courses numbered 599, 900 and 910 are not included in computation of GPA. Courses in which the student earns a grade of D will not count toward graduate credit, but the grade will be included when computing the GPA.

PhD Degree

The PhD degree is conferred upon individuals who have demonstrated proficiency in research, experimental design, and scientific achievement in a MicroPath discipline. The degree is not granted merely as a certificate of faithful performance of a prescribed program of studies and research.

The PhD degree requires completion of a minimum of 63 credit hours of specified graduate coursework with an overall GPA ≥ 3.0 , and includes the following:

- At least 18 graded units in the major
- At least 9 graded units in the minor
- At least 18 research units (MIC900)

- 18 dissertation units (MIC920) (≤ 9 in any semester)

The Plan of Study will be developed by the student and his/her GAC, recorded on the Master's or Doctoral Plan of Study form (<http://grad.arizona.edu/academics/degree-certification/forms>), and signed by the major professor as an indication of GAC approval (see above, **Graduate Advisory Committee**). All graded coursework should be completed by the end of the fourth semester. Courses numbered 599, 900 and 910 are not included in computation of GPA. Courses in which the student earns a grade of D will not count toward graduate credit, but the grade will be included when computing the GPA.

Students will complete a dissertation which contributes knowledge to microbiology and pathobiology, and which demonstrates a high degree of literary skill. The student will defend his/her dissertation in a final oral examination. The dissertation research should generate sufficient data to write at least two full-length manuscripts (not notes, brief communications, or reviews) suitable for publication in a refereed journal in the field of specialization. The manuscripts should be submitted for consideration prior to the final examination.

At least six semesters of full-time graduate study is required. Graduate credit earned at other institutions, if accepted by the major professor and Graduate Advisory Committee and approved by the MGPC and the Graduate College, may be counted toward degree requirements. The minimum residence requirement at The University of Arizona is for ≥ 2 regular semesters of full-time academic work or 30 graduate credits in the major field. All degree requirements for the PhD must be met within a period of 10 years.

Selection of at least one minor is required by the Graduate College. The minor may be in another graduate program, or in the MGP. Minor coursework should present a unifying theme to the remainder of the student's program. Minors in the MGP will consist of nine hours of coursework, but those in other programs may require more credits. In either case, all minor units must be in graded courses.

Dissertation work *in absentia* must be recommended by the Graduate Advisory Committee and the VSM department head and approved by petition to the Graduate College.

PhD students must prepare a dissertation proposal. A solid research proposal starts with a clearly stated hypothesis and carefully designed specific aims that will test the hypothesis. An NIH website, <http://www.niaid.nih.gov/ncn/grants/write/index.htm>, provides helpful guidance.

The **Research Proposal** is limited to 15 single spaced pages and should be prepared as follows:

1. **Hypothesis and Specific Aims:** Outline the general purpose or objectives of your research. You may organize it in outline form (specific aim 1, specific aim 2). Approximately half a page.
2. **Background and Significance:** Describe the relevant background to your proposed research. Also, convey the significance of your research in broader terms, e.g., the impact on human or animal health. Approximately 2-3 pages.

3. **Preliminary studies (if any):** Preliminary studies can include unpublished data generated in your laboratory that provides supporting evidence for the work described in the Research Design and Methods. The data may be presented as figures or tables, if appropriate. Approximately 1-2 pages.
4. **Research Design and Methods:** This section should be the focus of the proposal. It should include a description of the proposed work and how it relates to the specific aims (above). There should be sufficient experimental detail, predicted experimental results, possible pitfalls and alternative strategies. Approximately 11-12 pages, but in no case less than 10 pages.
5. **Timeline:** The section addresses the feasibility of conducting the proposed work over a three-year time frame, including the order of experiments and proposed amount of time required. It may be easier to include this information in a table format. Approximately half a page.
6. **References** should be formatted in a form appropriate to the discipline area, e.g., American Society of Microbiology journal format. The references are not included in the page limit.

The deadline for submission to the Graduate Advisory Committee is three weeks prior to the comprehensive doctoral examination (PhD students). After appropriate revisions and approval by the Graduate Advisory Committee, the proposal will serve as the basis for the research.

Comprehensive Doctoral (Preliminary) Examination

- The GAC will serve as the examining body for comprehensive doctoral (PhD) and final oral (MS, PhD) examinations.
- A dissertation proposal must be prepared and distributed as per the PhD Research Proposal Preparation Guidelines.
- Comprehensive doctoral examinations should be completed in the fifth semester. Completion of both written and oral examinations within the same semester is strongly recommended. Graduate College policy requires completion of the comprehensive doctoral examinations at least six months prior to the final oral examination. The Advancement to Candidacy Form is completed and submitted to the Graduate College.

The Comprehensive Doctoral Examination is considered to be a single examination, although it consists of written and oral parts. The student must demonstrate a substantial grasp of his/her field in a broad sense, and a sophisticated depth of understanding in his/her area of specialization. The Graduate Advisory Committee (which acts as the Examining Committee) will assess whether the student has demonstrated knowledge of their field to the degree that he/she would be acceptable as a professional and academic colleague.

The **Comprehensive Doctoral Written Examination** is comprised of questions submitted by the members of the Graduate Advisory Committee and assembled by the major professor. Individual committee members will decide the format for written examination questions (open book, closed book, or both). The written examination is to be completed in no more than five consecutive days. Failure of the written examination does not necessarily constitute a failure of the comprehensive doctoral examination as a whole. The candidate may repeat any/all of the written portion(s) of the examination once. The second examination may, if recommended by the Graduate Advisory Committee, follow additional coursework to enhance the candidate's readiness. Students failing the second written examination will be dismissed from the Program.

The **Comprehensive Doctoral Oral Examination** is taken after completion of the written examination. The Comprehensive Oral Examination consists of (a) questions regarding the dissertation research proposal, (b) clarification of answers to questions from the written examination, and (c) general questions related to the student's area of study. The student should consult Graduate Advisory Committee members to identify a date agreeable to all, and formally notify the Graduate Advisory Committee in writing to confirm the agreed upon date, time, and location of the oral examination at least three weeks before it occurs.

The student must also notify the Graduate College of the date of the Comprehensive Oral Examination at least three weeks in advance.

One committee member (not the major professor) acts as examination reporter. This person ensures that the exam is administered fairly and files the report with the Graduate College. All Examining Committee members must be in attendance for the entire exam, which should be at least one hour, and no longer than three hours, in length. Greater than one negative or abstaining vote represents a failure. If this occurs, a second examination may be scheduled, within six months of the initial attempt. Students failing the second oral examination will be dismissed from the Program, per Graduate College policy.

Following successful completion of the Comprehensive Doctoral Oral Examination, the Advancement to Candidacy Form must be completed and submitted to the Graduate College.

As per the Graduate College policy, all requirements for the PhD degree must be completed within five years of passing the Comprehensive Doctoral Examination.

Final Oral Examinations for the MS and PhD Degrees

The student will present a seminar on their research, consisting of a brief introduction and literature review, statement of the hypothesis that was tested and its significance, specific objectives, methods, results, and conclusions. The seminar will be followed by questions from the audience, followed by further examination by the Graduate Advisory Committee. This exam, including the seminar, will not exceed three hours in length.

The final examination is an oral defense of the thesis or dissertation and the student is expected to defend all of its elements. Accordingly, the student will be questioned on methods, results, interpretation and significance of data, and relevance of data to the acceptance or rejection of the

hypothesis. The examination also may include general questioning related to the field(s) of study encompassed by the thesis or dissertation and/or general knowledge of the discipline. The Committee on Graduate Study (convened by the Graduate College) will be involved only in the event of a second examination, following failure of a first attempt.

The student will consult with Graduate Advisory Committee members and identify an agreeable date, and will notify the Committee in writing to confirm the date, time, and location of the Final Oral Examination (MS and PhD) at least three weeks in advance. The student will also notify the Program Assistant, who will distribute formal seminar announcements.

The student is also responsible for notifying the Graduate College of the date of the Final Oral Examination, at least three weeks in advance. The Program Assistant can assist with this process.

Inclusion of Published Papers and Preprints in Theses or Dissertations

MicroPath Graduate Program policy allows a thesis or dissertation to contain one or more manuscripts prepared for submission, submitted, accepted for publication, or previously published, under the following guidelines:

1. If, the entire thesis or dissertation, excepting the Introduction, Discussion and Conclusion sections, consists of materials previously published or currently in submission for publication, the student must be the first author on at least one of these papers. In the event that published or submitted works comprise only part of the thesis or dissertation, they may consist of works on which the student is not the first author *if the Graduate Advisory Committee believes that the student's contribution is significant, and if such inclusion adds substantively to the thesis or dissertation.*
2. Additional material to be added to the thesis or dissertation (e.g., materials and methods or additional results) may be required at the discretion of the thesis/dissertation advisor.
3. In general, papers published in a peer-reviewed journal or pre-prints submitted to peer-reviewed journals are acceptable. Papers that may be included in the thesis or dissertation must be full-length primary research papers; shorter communications in preeminent journals may be included at the discretion of the Graduate Advisory Committee.
4. Papers in which the student is the first author and the student's faculty advisor is the remaining author are generally considered to be appropriate for inclusion in the thesis or dissertation. In those cases where the student is the first author on a work that has two or more authors, or where the student is not the primary author, *the Graduate Advisory Committee will assess whether inclusion of a part, or all of the published work in the thesis or dissertation is appropriate.* In the case of multiple author papers, a statement in the thesis or dissertation will list the parts of the work that were done by the student.
5. At the time of the oral defense of the thesis or dissertation, the student must be able to defend all the work included in the thesis or dissertation, even in the case of multiple authors. With this stipulation, the MicroPath Graduate Program Committee does not perceive a conflict of interest when other Graduate Advisory Committee members are co-authors on the paper.

The penultimate copy of the thesis or dissertation must be submitted to each Graduate Advisory Committee member and to the Program Assistant for general availability to Program Faculty, preferably four weeks before the Final Oral Examination; under extenuating circumstances and/or by agreement of the Committee, the thesis or dissertation may be submitted less than four weeks prior to the final examination.

The student will provide the Program Assistant (Department copy) and major professor with bound copies of the completed, final version of the thesis or dissertation. *The Department copy should be bound with a hard cover.* The University requires two additional copies. Students should consult the graduate degree certification homepage at <http://grad.arizona.edu/> for submission deadlines.

Satisfactory Academic Progress

Satisfactory academic progress for the MS and PhD degrees is outlined in the MicroPath Graduate Program Performance Guidelines for Satisfactory Academic Progress (MGP Guidelines, Appendix A).

Appendix A: Performance Guidelines for Satisfactory Academic Progress

MS Degree (Traditional Track)

Semester	Recommended Milestones*
1	<ul style="list-style-type: none"> ❖ Attend orientations (Graduate College, GATO, international), as available ❖ Identify research area ❖ Begin coursework and thesis research ❖ Identify potential GAC members
2	<ul style="list-style-type: none"> ❖ Attend orientations if not done previously ❖ Form Graduate Advisory Committee ❖ Continue coursework and research ❖ Formulate and submit Plan of Study
3	<ul style="list-style-type: none"> ❖ Continue coursework and research ❖ Meet with GAC to evaluate progress
4/5/6	<ul style="list-style-type: none"> ❖ Continue/complete coursework and research ❖ Meet with GAC to evaluate progress ❖ Write MS thesis and submit to GAC ❖ Present seminar and defend thesis ❖ Submit manuscript for publication

***Students and major professors must also complete an annual, beginning no less two semesters after entry to the MGP.**

MS Degree (Applied Track)

Semester	Recommended Milestones*
1	<ul style="list-style-type: none">❖ Attend orientations (Graduate College, international), as available❖ Identify research area❖ Begin coursework and thesis research❖ Identify potential GAC members
2	<ul style="list-style-type: none">❖ Attend orientations if not done earlier❖ Form Graduate Advisory Committee (GAC)❖ Formulate and submit Plan of Study❖ Continue coursework
3	<ul style="list-style-type: none">❖ Identify research area, continue coursework❖ Meet with GAC to evaluate research/coursework
4	<ul style="list-style-type: none">❖ Complete coursework/research❖ Write project report and submit to GAC❖ Present seminar and defend MS project

***Students and major professors must also complete an annual, beginning no less two semesters after entry to the MGP.**

MS Degree (Accelerated Track)

Semester	Recommended Milestones*
1	<ul style="list-style-type: none"> ❖ Identify research area ❖ Begin coursework/research ❖ Identify potential GAC members
2	<ul style="list-style-type: none"> ❖ Form Graduate Advisory Committee (GAC) ❖ Formulate and submit Plan of Study ❖ Continue coursework/research
3	<ul style="list-style-type: none"> ❖ Continue coursework/research ❖ Meet with GAC to evaluate progress with coursework/research
4	<ul style="list-style-type: none"> ❖ Continue/complete coursework/research ❖ Meet with GAC to evaluate progress
5/6	<ul style="list-style-type: none"> ❖ Continue/complete coursework (if necessary) and research ❖ Meet with GAC to evaluate progress ❖ Write thesis and submit to GAC ❖ Present seminar and defend MS thesis ❖ Submit manuscript for publication

***Students and major professors must also complete an annual, beginning no less two semesters after entry to the MGP.**

PhD Degree

Semester	Recommended Milestones
1	<ul style="list-style-type: none"> ❖ Attend orientations (Graduate College, GATO, international), as available ❖ Identify research area ❖ Begin coursework/research ❖ Identify potential GAC members
2	<ul style="list-style-type: none"> ❖ Attend orientations if not done previously ❖ Form GAC ❖ Continue coursework/research
3	<ul style="list-style-type: none"> ❖ Formulate and submit Plan of Study ❖ Continue coursework/research ❖ Meet with GAC to evaluate progress
4	<ul style="list-style-type: none"> ❖ Continue coursework/research ❖ Meet with GAC to evaluate progress ❖ Present research at departmental seminar (if appropriate)
5	<ul style="list-style-type: none"> ❖ Continue/complete coursework (if necessary) and research ❖ Meet with GAC to evaluate progress ❖ Pass comprehensive doctoral examination
6	<ul style="list-style-type: none"> ❖ Complete coursework (if necessary) and research ❖ Meet with GAC to evaluate progress
7/8+	<ul style="list-style-type: none"> ❖ Continue/complete research ❖ Meet with GAC to evaluate progress ❖ Write dissertation and submit to GAC ❖ Present seminar and defend dissertation ❖ Submit manuscripts (2) for publication

***Students and major professors must also complete an annual, beginning no less two semesters after entry to the MGP.**

All Degree Programs

The MicroPath Graduate Program adheres to the Graduate College policy regarding Satisfactory Academic Progress, including those regarding minimum GPA requirements. The entire policy can be reviewed at http://grad.arizona.edu/Catalog/Policies/Academic_Policies.php.

MicroPath Graduate Program Annual Reports are completed and signed by both mentor and student and serve as an annual progress report. Any concerns or deficiencies regarding a student's progress are included as part of the report. These reports are due on December 15 of every year the student is in residence in the MicroPath Graduate Program.

If a student fails to meet MicroPath Graduate Program guidelines for satisfactory progress as outlined in the Annual Report, the student will receive a letter with specific notification of any deficiencies, action(s) required to rectify the deficiencies and a date by which such action(s) must be taken. This notification will be no more than 30 days from the Annual Report due date.

Students may appeal the notification in a Graduate Advisory Committee meeting specifically held for that purpose. Depending on the outcome of the meeting, the original notification may stand, or the deficiencies, action and deadlines may be modified.

Students who fail to correct any deficiencies by the date given in the notification letter or at the Graduate Advisory Committee meeting may be dismissed from the MicroPath Graduate Program.

Converting from MS to PhD

If a student in the MicroPath Graduate Program wants to convert from an MS to a PhD candidate, he/she should:

1. The student and mentor seek approval from the GAC.
2. The mentor submits a letter to the MGPC, requesting the change and enumerating the reasons for it.
3. The MGPC will approve or disapprove the request and inform the student, mentor, Graduate Advisory Committee and department head in writing.
4. If the request is approved, the student will complete a Change of Degree Form, which will be signed by the department head and returned to the Graduate College.

A student may convert from a PhD to an MS in consultation with the mentor only. The GAC, the MGPC, and the VSM department head should be informed of the decision. The student must complete the Change of Degree Form, as above.

Graduate Student Outcomes

The MicroPath Graduate Program offered by the Department of Veterinary Science and Microbiology will provide graduate students with an education that will result in knowledge of appropriate subject matter, communication skills, and methodological expertise that will help the student in their subsequent professional activities.

Expected Outcomes

- Competence of basic knowledge in the disciplines of microbiology and pathobiology, including aspects of bacteriology, parasitology, virology, immunology and microbial genetics
- Knowledge that is at the forefront of the student's research field
- Proficiency in scientific inquiry, including:
 - skills of critical thinking
 - the ability to formulate hypotheses and solve them
 - the ability to analyze and interpret data
- Effective oral and written communication skills
- The ability to engage in self-initiated learning and discovery
- The ability to engage in self-criticism and self-evaluation
- The ability to work as part of a team to achieve these goals

Outcomes Assessment

Current graduate outcomes assessment tools:

- Course grades
- Annual MicroPath Graduate Advisory Committee meetings and written meeting summaries required; recommended semi-annually.
- Annual student progress reports
- Student seminar presentations (departmental, and at national and international meetings)
- Comprehensive doctoral examinations (for PhD candidates)
- Graduate thesis (MS) or dissertation (PhD)
- Thesis/dissertation defense examinations
- Publication of work derived from the graduate thesis/dissertation
- Employment history

Proposed additional assessment tools:

- Graduate student alumni survey
- Focus groups