

Graduate Program Guidelines

**A Supplement to the LSU Graduate Catalogue
Intended for Use by the Department of Pathobiological
Sciences (PBS) Graduate Students and Faculty**

2023 Revision by Graduate Program Committee

**Approved by PBS Graduate Faculty on
December 14, 2023**

**DEPARTMENT OF PATHOBIOLOGICAL SCIENCES
SCHOOL OF VETERINARY MEDICINE
LOUISIANA STATE UNIVERSITY
BATON ROUGE, LOUISIANA**

**DEPARTMENT OF PATHOBIOLOGICAL SCIENCES
GRADUATE PROGRAM GUIDELINES**

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Intended for use by PBS Graduate Students and Faculty

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1. DEPARTMENTAL PHILOSOPHY ON GRADUATE EDUCATION

The faculty of the Department of Pathobiological Sciences (PBS) are involved in research and teaching on the pathogenesis of diseases of humans and animals with an emphasis on immunology, molecular virology, bacterial and viral pathogenesis, parasitology and parasite-induced diseases, epidemiology and community health, cancer biology, and pathology. Communication skills are fostered through active research discussion groups, interdisciplinary seminars, oral examinations, presentation of papers at scientific meetings, and publication of research findings. This academic and scientific program develops scientists who can contribute to the improved health of humans as well as food-producing, companion, laboratory, and aquatic animals. The research direction of the PBS faculty members is illustrated by the titles of the research projects currently supported through intra- and extramural funding (see <https://www.lsu.edu/vetmed/pbs/index.php>). Graduate students who follow this option can focus on any research led by PBS faculty. Graduate study programs will be tailored to satisfy the mutual interests of individual students and faculty by providing guidance for formal instruction and experimental investigations pertinent to the student's chosen area of study under the supervision and guidance of their mentor and advisory committee.

2. RESPONSIBILITIES IN THE GRADUATE PROGRAM

Graduate education within the department is guided by the Graduate School, the PBS Graduate Advisor (GA), the departmental graduate faculty, and the Graduate Program Committee (GPC). The principal responsibility for an individual graduate student's study plan and research rests with that student, guided by the student's Graduate Research Mentor (GRM) and a responsible Graduate Advisory Committee (GAC). The Graduate Admissions Coordinator assists the GA and Department Head (DH) with the admissions process. The role of each of these individuals and committees is defined below.

2.1 The PBS Graduate Advisor

The GA is a tenured member of the PBS graduate faculty who acts as the administrator for the PBS graduate program. The DH appoints this individual from a pool of nominees forward from the PBS faculty to a renewable, 4-year term.

The GA oversees the departmental admission process. The GA acts as a contact for potential students, receives copies of completed application packets from the Graduate Admissions Coordinator and the Graduate School, and determines if the applicant meets the minimum requirements for acceptance into the program. The GA contacts the graduate faculty to review folders and then presents a summary of the potential graduate candidate's folder evaluation to the PBS graduate faculty. The GA collects a vote on the acceptance of applicants and informs the DH of the faculty decision. The GA formally determines whether the student's program of study meets the PBS requirements. Also, the GA formally advise them on advancement to candidacy for higher degrees, consider their petitions to change majors, to add or drop courses, to apply for readmission, etc.

The optimal time of completion for a PhD and a Master of Science are 4 years and 2 years respectively. The GA is responsible for annually (start of fall semester) monitoring the graduate school milestones for each graduate student using the PBS checklists (see Appendices B through E), thus assuring the student's timely progression through the program. The student is responsible for contacting the GA for annual monitoring. The GA will inform the mentor of any problems identified on annual review of each student's checklist. In addition, the student degree progress reports prepared annually by the mentor and student will be filed with the GA.

As the liaison with the Graduate School, the GA is responsible for implementation of changes in the graduate program as recommended by the Graduate Program Committee and participates as a non-voting member on that committee (In the event of a tie, the GA will cast the tie-breaking vote).

The GA serves as coordinator for assignments and grading of the laboratory rotation program (see Section 8.5).

The GA serves as the first mediator in resolution of disputes between students and faculty with regards to the PBS graduate program. If the GA is unable to mediate an accord, the parties may take their grievance

through the LSU chain of responsibility: DH, SVM Associate Dean of Research, Dean of the Graduate School, etc.

2.2 The Student (Return to Table of Contents)

The student has the primary responsibility for the success of his or her graduate program. The student is responsible for initiating contacts to identify a GRM and the members of his/her GAC whose academic interests and research programs coincide with the student's goals. He/she is responsible for writing the proposed plan of study and conducting the research necessary to successfully complete all the degree requirements. Continued updating of the advisor and the GAC of the research progress is the responsibility of the student. The student shall organize a GAC meeting on an annual basis to discuss the student's progress. The student will meet with his/her GRM so that an annual, written report on the student's degree progress can be prepared and submitted to the GA. The student must follow the PBS checklist of degree requirements (see Appendices B through E) and meet annually at the start of fall semester with the GA to update his/her status in completing the appropriate checklist. Time limits outlined by the LSU Graduate School must be followed.

Program Change

Graduate students must assume full responsibility for knowledge of Graduate School policies (<https://www.lsu.edu/graduateschool/index.php>) and departmental requirements (i.e., Department of Pathobiological Sciences; <https://www.lsu.edu/vetmed/pbs/index.php>) concerning their individual degree programs. Advances in knowledge and changes in methodology at times require alterations in degree programs. Therefore, graduate students should be always aware of the current regulations and requirements of the Graduate School and of their departments. Current regulations and requirements take precedence over any previously promulgated policies.

2.3 The Graduate Research Mentor (Major Professor) (GRM) (Return to Table of Contents)

The GRM must be a member of the PBS graduate faculty. He/she acts as mentor and is responsible for guiding the student through the graduate program daily. The GRM advises the student on the membership on the student's GAC. The GRM evaluates the student's research, chairs the student's graduate examinations, and acts as a liaison between the Graduate School and the student. It is the mentor's responsibility, with the cooperation of the student and the GAC, to identify and help rectify any coursework deficiencies pertinent to the student's degree. The GRM shall provide a written report on the student's degree progress to the GA annually.

2.4 Individual Development Plan (IDP)

The students are required to develop an individual development plan (IDP) by the end of the first year of their enrollment in the PBS Graduate Program. The plan will be implemented by the student and discussed/revised at least once a year with his/her GRM. Discussion and updates of the IDP will be performed as part of the GRM mandatory annual evaluation. The evaluation should be documented by the first day of May each year and the completed form should be returned to the PBS Graduate Advisor. For more information about the IDP visit: <http://myidp.sciencecareers.org/>

2.5 The Graduate Advisory Committee (GAC) (Return to Table of Contents)

The GRM and the graduate student, together, should propose the membership of the GAC, which must be approved by the DH and the Dean of the Graduate School through appropriate and timely submission of documents preceding the general examination. The members may be from any department pertinent to the student's area of concentration, however there is a requirement of at least two tenured faculty from PBS. The specific make-up of the committee for PhD and MS degrees is outlined below.

The student and the GAC are responsible for formulating the study and research plan. The study plan for students should be based on the student's academic background, area of specialization, PBS core requirements, and recommendation of the GAC. The GAC is chaired by the student's GRM and bears

responsibility for planning the student's study plan, for monitoring the student's progress through that program, and for determining whether the student has met the standards of the department and the university for the degree. It is the obligation of each member of a GAC to insist on an adequately designed and rigorous program for the MS and PhD student.

The membership of the GAC and the Study plan for students in both the MS and PhD programs should be submitted to the DH and GA within the time frames outlined in Appendices B through E.

2.6 The Graduate Program Committee (GPC)

The GPC consists of four PBS faculty who are members of the graduate faculty. The GPC members are appointed by the DH for staggered four-year terms. The most senior member of the committee will serve as chair. Members in the third and fourth years of their term on the committee will also serve as the departmental representatives to the SVM Graduate Academic Studies (GAS) Council. The GAS Council Members may serve for a maximum of 8 consecutive years (two terms). The GA serves as an *ad hoc* member but may cast a tie-breaking vote.

The duties of the GPC include:

1. Create, implement, and update a plan of active recruitment of graduate students in collaboration with the departmental graduate student recruiting committee appointed by the DH.
2. Coordinate advertisement of the PBS Department through annual reports, flyers and pamphlets, web-based opportunities to promote local, state, national and international recognition of the department and its faculty and graduates in collaboration with the departmental graduate student recruiting committee appointed by the DH.
3. Annually review the PBS Graduate Guidelines to determine if adjustments are necessary and present these changes to the graduate faculty.
4. Evaluate and make recommendations on admission of students under special circumstances.
5. Organize the graduate student orientation program (see Sections 7.1, 8.1)
6. Evaluate requests for course exemption made by the GRMs
7. Evaluate potential misconduct and other student and student-mentor issues brought by the GA and recommend potential actions to the Department Head
8. Report ongoing activities to the PBS faculty.

2.7 The Department Head (DH)

The DH, a full member of graduate faculty, may serve as a GRM and as a member of a GAC. To avoid potential conflicts, the DH may not serve as the GA or serve on the GPC or as a departmental representative to the GAS Council. The DH serves as the chief academic officer for PBS and may request to attend a meeting that involves student evaluations, student conduct, student-mentor relationships, and other relevant matters to ensure that PBS guidelines are followed. For example, ensuring that a thorough evaluation is performed during general exams, work-in-progress reviews, etc.

The specific responsibilities of the DH are as follows:

1. The DH will appoint the GA from a pool of nominees forwarded from the PBS faculty to a renewable, 4-year term.
2. Based on information provided by the GA, the DH will inform students by letter of their acceptance into the department and of the awarding of stipends (if applicable).
3. The DH will keep the GA current on the availability of stipends.
4. The DH must approve the selection of the GRM and membership of GAC.
5. The DH must approve all requests for part-time status in the MS and PhD programs.
6. If the GA (as the first mediator in resolution of disputes between students and faculty) is unable to mediate an accord, the parties may take their grievance to the DH for a final resolution.
7. The DH appoints members of the GPC.

2.8 Graduate Admissions Coordinator

The responsibilities of this position are as follows:

1. This person will maintain the official application packet for each applicant to the PBS graduate program. Graduate faculty will have access to a copy of this information throughout the application process.
2. This person will serve as a contact for applicants who are requesting information about PBS or the application process. These requests may be handled by the graduate admissions coordinator or passed on to the DH or GA.
3. This person will monitor the status of each application packet and contact applicants regarding missing items in their application packet (e.g., letters of recommendation).
4. This person will deliver copies of the completed applications packets to the GA who will present these applicants to the Graduate Faculty for decision on admission based on GPC recommendations.

3. ACCEPTANCE INTO THE PBS GRADUATE PROGRAM

Students must meet the acceptance criteria outlined by the LSU Graduate School and the following the PBS requirements (GPAs are rounded to nearest tenth): An overall GPA of at least 3.2. Non-English speaking foreign nationals must have a TOEFL score of at least 550 on the paper-based test, 213 on the computer-based test, or 79 on the Internet-based test, or an IELTS score of at least 6.5. PBS will consider applicants on a case-by-case basis with a GPA of 2.9 - 3.2 provided that additional criteria are met including previous research experience, letters of recommendation, publications, etc. These student candidates may be admitted on a probational status.

A good "fit" of mentor and student is a departmental priority and thus strong consideration is given to the student's stated professional goals. Successful applicants will have an adequate understanding of biology, chemistry, biochemistry, and microbiology. After evaluation of the application by the PBS Graduate Faculty, the student will be informed of acceptance into the program in a timely manner. Applicants seeking stipend support should submit their application by February 1st for matriculation in the fall semester and September 1st for the following spring semester. A faculty member may appeal to the PBS Graduate Faculty at a scheduled meeting for the admission of a student who does not meet the acceptance criteria. After discussion of the student's application, the PBS Graduate Faculty will vote on admission of that student and the decision will be final.

4. GRADUATE STIPENDS

The PBS graduate program should be considered by the student to be a full-time commitment. Every attempt will be made by the department, and should be made by the student, to obtain stipend support for the student's graduate program; however, stipend support cannot be guaranteed by the department and students should be aware that acceptance in the PBS graduate program is independent of stipend support. A limited number of stipends are available. All PBS graduate students receiving either SVM or PBS funding will be automatically listed as Research Assistants (RA) and depending on departmental needs will be assigned to individual faculty. There is an expectation that RAs may be called to assist in graduate courses.

Part-time students are discouraged in both the MS and PhD programs, except for residents (see below). Under special circumstances part-time students may be admitted into the program. This requires the student to have identified a GRM and to obtain approval by the GA, the GPC, and the DH. Part-time students shall not receive graduate stipends and must be self-supporting. The programs of part-time students require close supervision by the GRM and GAC to ensure completion in a timely manner, as per the LSU Graduate School.

5. RESIDENCY PROGRAMS FOR VETERINARIANS

The Louisiana State University School of Veterinary Medicine offers residency programs for veterinarians in several areas. Two of these programs, Pathology and Laboratory Animal Medicine, are in the Department of PBS. Acceptance into the residency programs is separate from acceptance into the graduate program and potential residents must apply to and be accepted in a graduate program.

Residents are encouraged to explore all the options available through the School of Veterinary Medicine before choosing their graduate program. Following arrival at LSU, students should meet with and discuss the graduate opportunities available with each of the graduate faculty in PBS.

The faculty recognize that time demands on residents are different than on full-time graduate students and that the timeline must be adjusted accordingly. Appendices D and E outline guidelines for students in combined Resident-MS and Resident-PhD programs, respectively.

6. THE PBS GRADUATE PROGRAM CORE REQUIREMENTS

Graduate students will receive a degree in Biomedical and Veterinary Medical Sciences through the Department of Pathobiological Sciences. The departmental requirements for graduation are as follows:

6.1. Required Courses

A graduate of PBS is expected to have an adequate basic understanding of the biological basis of the host response to infectious agents and the analysis of scientific data. To this end, the GAC must assure that each student has the content knowledge of the following courses or their equivalents prior to graduation for MS or prior to general examination of PhD students. Incoming students who have successfully completed (grade B or above; within the previous 3 years) courses in a U.S. graduate program (MS or PhD) are exempt from required courses of the corresponding subjects. All exemption(s) must be applied for in writing with a signature of the GRM (and/or the resident mentor for students in Resident-MS or Resident-PhD) and approved by the GPC. The required courses eligible for exemption are Eukaryotic Molecular Genetics, BIOL4132; and statistical applications, PBS7312. Students who passed the general pathology section of the American College of Veterinary Pathologists (ACVP) board examination are exempt from BIOL4123.

Students in PBS are required to take the following core courses (see suggested schedule in Page 11):

- A. VMED7004 Introduction to Research (2 credits) Fall.
- B. CBS 7104 Biomedical Cell and Molecular Biology (4 credits) Fall.
- C. PBS 7003 Basic Concepts in Immunology (3 credits) Spring.
- D. PBS7312 Concepts in Epidemiology (4 credits) Spring.
- E. PBS7004 Current Literature in Pathobiological Sciences
 - MS students must take 2 credits PhD students must take 4 credits
- F. PBS7007 Seminar Series in Pathobiological Sciences
 - MS students must take 2 credits PhD students must take 4 credits

6.2 PBS Trainee Symposium

A day-long event that will focus on graduate student, postdoctoral fellow, and resident presentations of proposed research, progress reports of their thesis and dissertation research, or diagnostic case reports. Invited speaker(s) on topics related to graduate student issues (e.g., career opportunities, job search skills) could be included. Graduate students are required to participate in this event, as excused absence will be on a case-by-case basis and only given in unavoidable circumstances. The GA will let the students know when it is their turn to organize the symposium and guide them through the general process. The symposium and related social function will be organized by PBS graduate students and DH. It will be open to all faculty, staff, and graduate students. This event will be scheduled annually, between the end of Spring semester and start of summer session.

7. MASTER OF SCIENCE DEGREE (Return to Table of Contents)

The MS program in PBS is designed to further develop the scientific knowledge and problem-solving abilities of the student. In this degree program students expand their knowledge of infectious or parasitic diseases, immunology, epidemiology, pathology and related sciences through advanced courses and seminars, while learning to apply the scientific method to the study of a specific research problem. A hypothesis-based thesis on the student's original research is required.

7.1 Graduate Student Orientation

All incoming MS graduate students are required to attend an orientation session. This orientation will be held prior to start of fall semester classes (a spring semester orientation could also be scheduled, if needed). The orientation will include a tour of departmental facilities and other areas of school that pertain to their training. In addition, PBS faculty will present an overview of their current research, as well as available stipend support for graduate students. The orientation will provide contact opportunities to graduate students who will participate in the laboratory rotation program.

7.2. Graduate Advisory Committee (GAC)

The GAC for the degree of Master of Science consists of a minimum of three faculty one of whom must be a full member of the graduate faculty. Members of the GAC should include the GRM, one other PBS graduate faculty member, and one external graduate faculty member. The GAC must be formed by the end of the first year of attendance. The GRM serves as the chair of the GAC. Membership must be approved by the DH and the Dean of the Graduate School. The GAC should be composed of those faculty members best qualified to direct and evaluate the student's study plan and research. Responsibility for nominating the committee members lays with the student in consultation with his/her GRM. The student must inform the GA of the committee membership.

7.3. Study Plan and Research

The MS study plan involves course work in the student's area of specialty and completion of an original research project resulting in an acceptable thesis. The study plan and research proposal should be submitted to the student's GAC by the end of the third semester. The plan consists of courses taken, grades received in these courses, courses planned to finish the degree program, and a brief research proposal as outlined in Appendix. This plan will be discussed, amended (if necessary) and approved by the GAC.

7.4. Course Work

Minimal course loads are determined by the student with the approval of the GAC and to meet Graduate School requirements, but must meet the following requirements: A total minimum of 30 hours of credit beyond the baccalaureate or professional degree in courses numbered 4000 with the following courses included:

- A. Minimum of 6 hours must be in VMED8000 (Thesis Research)
- B. Minimum of 24 hours must be in courses other than VMED8000, among which, minimum of 12 hours must be in courses numbered 7000 and above
- C. Limit of 6 hours of *Research Techniques* (7002) (any department) and 8 hours of *Special Topics* (7003) (any department) may be used toward any graduate degree.
- E. Students must fulfill the following required courses:
 - i. VMED7004 *Introduction to Research* (2 credits)
 - ii. PBS7003 *Basic Concepts in Immunology* (3 credits)
 - iii. CBS 7104 *Biomedical Cell and Molecular Biology* (4 credits)
 - iv. PBS7312 *Concepts in Epidemiology* (4 credits)
 - v. PBS7007 *Seminar Series in Pathobiological Sciences* (2)
 - vi. PBS7004 *Current Literature in PBS* (2 credits)
 - vii. VMED8000 *Thesis Research* (1-12 credits)

And at least ONE of the following elective courses:

- viii. PBS7003 *Parasitic Effects on Animal Performance* (3 credits)
- ix. PBS7003 *Molecular and Cellular Mechanisms of Host Response to Infection* (3 credits)
- x. PBS7003 *Pathogenic Mechanisms of Bacteria* (3 credits)
- xi. PBS7003 *Molecular mechanisms of Viral Pathogenesis* (3 credits)
- xii. PBS7003 *Grant writing* (2 credits)

F. Maximum of 6 semester hours of transfer credit from other schools and/or credit taken while classified as an LSU extension or non-matriculating student may be used in a master's degree program if approved by the GAC, DH, and the Dean of the Graduate School.

7.5 Seminars

PBS graduate students are required to attend all PBS-sponsored seminars, as possible. Credit will be assigned for 2 semesters with concurrent enrollment in PBS7007 *Seminar Series in Pathobiological Sciences*. In addition, MS candidates are required to present two seminars to the department on their thesis research. Both seminars will be announced and open to all PBS faculty and graduate students. The time and date of these seminars will be determined by the candidate and their graduate advisory committee.

- a. Seminar presenting the proposed thesis research project. The target dates for presenting this seminar would be the first year of MS program and second year of residency/MS program. This seminar could be presented at the annual PBS Graduate Student Symposium.
- b. Thesis defense seminar: This seminar could be presented at the PBS seminar series.

7.6. Thesis

The MS student will submit to his/her GAC a well written, technical thesis based upon original research. The form of the thesis must be in accordance with the instructions in the pamphlet *Preparation of Theses, Dissertations and Monographs*, available in the Graduate Records Office of the Graduate School. A minimum of two hard copies on cotton paper are to be submitted to the PBS department for archival in the department and the SVM library.

7.7. Examination

Final Examination and Thesis Defense. A comprehensive final examination will include an open presentation and defense of the thesis followed by an oral examination by the GAC. To pass this examination, there may not be more than one dissenting vote.

7.8. Duration of Course of Study

Full time MS students should complete their study plan and research within two academic years with an accumulation of 30 semester credit hours (see recommended timetable, Appendix B). Students combining a MS in PBS with a DVM residency program should complete their study plan and research within three academic years (see recommended timetable, Appendix). All students must complete their MS degree within five calendar years after matriculation.

7.9. Recommendation for Enrollment into a PhD Study Plan and Research

A student enrolled in the MS program may request that the MS degree be bypassed, and that the student be allowed to pursue a PhD program. The GAC will evaluate the performance and progress of the student to determine if the request is justified by the student's performance. If so, the student's GRM should

inform the GA and the PBS DH in writing. This privilege cannot be extended to a student without successful completion of two semesters in the graduate program.

8. DOCTOR OF PHILOSOPHY DEGREE

The emphasis in the doctoral program is placed on original, hypothesis driven, and creative research. The aim of this program is to enable the student to become a self-educating scholar and researcher.

8.1 Graduate Student Orientation

All incoming PhD graduate students are required to attend an orientation session. This orientation will be held prior to start of fall semester classes (a spring semester orientation could also be scheduled, if needed). The orientation will include a tour of departmental facilities and other areas of school that pertain to their training. In addition, PBS faculty will present an overview of their current research, as well as available stipend support for graduate students. The orientation will provide contact opportunities to graduate students who will participate in the laboratory rotation program.

8.2 Graduate Advisory Committee (GAC)

The PhD GAC consists of at least four graduate faculty members, two of whom must be from PBS (GRM and another PBS member), one external member (i.e., from another department), and Deans' representative assigned by the LSU Graduate School. The GAC should be composed of those faculty members best qualified to direct and evaluate the student's study plan and research; however, the committee must have two full members of the Graduate Faculty, of which at least one must be from PBS. The GAC should be formed by the beginning of the second year and provide a written summary report of research plans to the GA and DH by the end of the second year and annually thereafter. The report will be in a form of a letter by the chair of each committee outlining major findings and future plans. The GAC must be approved by the DH and the Dean of the Graduate School, and the membership forwarded to the GA. Should the student declare a minor, one member of the committee must be in that field or department. Responsibility for selecting the committee lays with the student in consultation with his/her GRM. The Dean's representative of the committee shall be selected by the Graduate School prior to the general examination (see below) and will serve on the student's general and final examinations. The Dean's representative should be invited to attend scheduled meetings with the student and the GAC to evaluate progress towards completion of the PhD degree (see below).

It is the responsibility of the student to keep the GAC informed of his/her academic and research progress. It is also the responsibility of the student to schedule a Thesis Proposal meeting with the GAC no later than six (6) months after successfully passing the General Exam (Section 8.8.2). The student will be required to schedule a meeting with the GAC on annual basis to present his/her research progress. A mandatory annual evaluation from the GAC members must be performed by the first day of the month of May each year. All members of the GAC are required to complete the SVM Student Assessment Rubric form every time that the student meets with their GAC. Those forms have to be returned by the faculty to the PBS Graduate Advisor (as indicated in the form).

8.3. Study Plan and Research (Return to Table of Contents)

Each PhD student should receive exposure to the basic area of knowledge necessary for his/her future performance as a well-trained Doctor of Philosophy: adequate knowledge in biological and physical sciences and in-depth knowledge in the selected areas of specialization. The research emphasis will be directed towards properties of infectious agents and the biological, immunological, genetic, molecular, or ecological mechanisms of diseases including basic biology, detection, prevention, and treatment as well as fundamental immunology and cancer biology.

To ensure a timely progression to graduation, a study plan and research should be submitted to the student's GAC by the start of second year. In addition to the *Program of Study for a Doctoral Degree* form required by the Graduate School, students must provide an outline of the courses taken, grades received in these courses, future courses, and a research proposal as outlined in Appendix. The emphasis should be on generating a clear concise document. This plan will be discussed, amended (if necessary), and approved by

the GAC.

8.4. Course Work (Return to Table of Contents)

Minimal course loads are determined by the student with the approval of the GAC and to meet Graduate School requirements but must include: A total minimum of 54 credits (the equivalent of three years of course work = 9 credits/semester x 6 semesters) in courses numbered 4000 and above. Must include 24 hours of credit earned outside of Research Courses (VMED 8900 and VMED 9000)

- A. Students must fulfill the following required courses.
- i. VMED7004 *Introduction to Research* (2 credits)
 - ii. PBS7003 *Basic Concepts of Immunology* (3 credits)
 - iii. CBS 7104 *Biomedical Cell and Molecular Biology* (4 credits)
 - iv. PBS7312 *Concepts in Epidemiology* (4 credits)
 - v. PBS7003 *Grant Writing* (3 credits)
 - vi. PBS7004 *Current Literature in Pathobiological Sciences* (4 credits)
 - vii. PBS 7007 *Seminar Series in Pathobiological Sciences* (4 credits)
 - viii. VMED8900 *Pre-dissertation Research* (3 credits) (*See Exceptions Below)
 - ix. VMED9000 *Dissertation Research* (1-12 credits)

And at least ONE of the following elective courses:

- x. PBS7003 *Parasitic Effects on Animal Performance* (3 credits)
- xi. PBS7003 *Molecular and Cellular Mechanisms of Host Response to Infection* (3 credits)
- xii. PBS7003 *Pathogenic Mechanisms of Bacteria* (3 credits)
- xiii. PBS7003 *Molecular mechanisms of Viral Pathogenesis* (3 credits)

* VMED8900 Exceptions:

- Graduate students supported by extramural funds obtained by an identified GRM are exempt. A PhD student's residency program director, GRM, or GAC may require the student to take VMED8900 as part of their program of study.

- B. If the student declares a minor, the student must fulfill the requirements as defined by the minor department in addition to the PBS requirements.
- C. Maximum of 6 hours of 7002 (any department) and 8 hours of 7003 (any department) may be used.

Example of Recommended Schedule

1st YEAR

Fall Semester

- CBS 7104 Biomedical Cell and Molecular Biology (4)
- VMED8900 Pre-dissertation Research (Lab rotations) (3)
- PBS7007 Seminars Series in Pathobiological Sciences (1)
- PBS7004 Current Literature in PBS (1)
- VMED7004 Introduction to Research (2)

Spring Semester

- PBS7003 Basic Concepts in Immunology (3)
- VMED9000 Dissertation Research (1-12)
- PBS7007 Seminar Series in PBS (1)
- PBS7004 Current Literature in PBS (1)

- PBS7312 Concepts in Epidemiology (4)

2nd YEAR

Fall Semester

- VMED9000 Dissertation Research (1-12)
- PBS7007 Seminar Series in PBS (1)
- PBS7004 Current Literature in PBS (1)
- ONE of the electives: PBS7003 Molecular Mechanisms of Viral Pathogenesis (3); or
PBS7003 Pathogenic Mechanisms of Bacteria (3); or
PBS7003 Molecular and Cellular Mechanisms of Host Responses to Infection (3)

Spring Semester

- PBS7003 Grant writing
- VMED9000 Dissertation Research (1-12)
- PBS7007 Seminar Series in PBS (1)
- PBS7004 Current literature in PBS (1)
- An elective: PBS7003 Parasitic Effects on Animal Performance (3)

3rd YEAR

Fall Semester

- GENERAL EXAM

8.5 Laboratory Rotation Program (Return to Table of Contents)

PhD-candidate graduate students with stipends supported by PBS or SVM funds are required to rotate through the laboratories of 3 PBS investigators during the Fall and Spring semesters of their first year. Each rotation will last 8 weeks with 3 credit hours. Start and end dates for the rotations will be provided to the students during the departmental orientation. Students will select laboratory assignments from the investigators who offer this opportunity at the graduate student orientation. Students are expected to be active participants in the laboratory, working on either independent projects or on-going studies, gaining insight into both laboratory techniques and experimental design. Expectations from the mentor and grading criteria should be discussed with the student at the start of the rotation. The student should communicate the course schedules with the investigator and define the time committed to the bench work, with a minimum of 18h/week. Faculty should recognize the demands of the student course load and consider a reasonable amount of flexibility.

Residents in PhD program may complete this requirement during the 3 years of their residency program. Course credit (minimum of 3 semester credits) for this requirement will be achieved by enrollment in VMED8900 (*Pathobiological Sciences Pre-dissertation Research*), with the PBS Graduate Advisor as coordinator. Exemptions/ exceptions for this class are detailed in Section 6.2. Students are required to complete a written report at the end of each rotation and investigators are required to complete the Student Laboratory Rotation Evaluation form. Both documents will be submitted to the Graduate Advisor.

8.6 Seminars (Return to Table of Contents)

PBS graduate students are required to attend all PBS-sponsored seminars. Credit will be assigned for 4 semesters with concurrent enrolment in PBS7007 *Seminar Series in Pathobiological Sciences*. In addition, PhD candidates are required to present two formal seminars to the department on their dissertation research. These seminars will be announced and open to all PBS faculty and graduate students. The time and date of these seminars will be determined by the candidate and their graduate advisory committee.

a. PBS Graduate Student Seminar. A work-in-progress seminar should be presented during the third year of PhD training. This is expected to be a 45-minute seminar allowing an additional 15 minutes for questions.

b. Dissertation defense seminar. This seminar could be presented at the PBS seminar series.

Students are also required to have an annual participation at the PBS Graduate Student Symposium.

8.7 Dissertation (Return to Table of Contents)

A well-written dissertation based on the student's original research is part of the requirement for a PhD. The dissertation must demonstrate a contribution to the student's major field of study and a mastery of research techniques. The format of the dissertation must be in accordance with the instructions in the pamphlet *Guidelines for the Preparation of Theses, Dissertations and Monographs*, available in the Graduate Records Office or on the LSU Web Site. A minimum of two hard copies on cotton paper are to be submitted to the PBS department for archival in the department and the SVM library.

8.8. Examinations (Return to Table of Contents)

8.8.1. General Examination (this exam serves as the qualifying exam for fellowship applications): Students become eligible to take the general examination after demonstrating adequate academic and professional aptitude to the GAC. The general examination will be scheduled within three (3) months of completion of required course work, preferably after the Spring semester of the student's second academic year but must be passed prior to the end of the Fall semester of the student's third PhD academic year. Students that have not passed the general exam by the indicated timeline will be under penalty of putting their stipend on hold until the general examination requirement is completed.

Passage of the general examination demonstrates the student has acquired a broad-based scientific knowledge, a detailed understanding of their area of expertise, and can formulate a hypothesis and design an experimental approach to address the problem. The specific format of the examination will include both written and oral portions and will be administered as follows: The student (independent of the GRM) will propose a topic for an NIH style F31 (NRSA Individual Pre-doctoral fellowship program), USDA-NIFA or NSF research proposal format. The topic will be submitted to the GAC for approval and documented by completing the required form. Once the topic is approved, the student will have one (1) month to prepare a written proposal in the format of the above-mentioned NIH F31 funding mechanism. A sample proposal to familiarize the student with the format of the workflow chart portion will be distributed in advance. The proposal will be submitted to members of the GAC for evaluation of the written component of the examination. One (1) week later, the student will defend his/her proposal to the GAC as part of the oral component of the examination. The oral examination will NOT be limited to the written proposal; rather, the written proposal will serve as a basis from which the student's knowledge of their completed curriculum will be examined.

Failure of the general examination requires more than one dissenting vote. Based on the results of the general examination, the GAC can recommend additional course work or other remediation. If the student fails the general examination, he/she may retake the written component, the oral component, or both parts of the general examination depending on the decision of the GAC. Should the student choose to retake the general examination, the examination must be completed within 13 calendar months and will be based on the original proposed research topic. Should two members of the GAC again fail the student; the student will be dismissed from the PBS PhD Program. If deemed appropriate and worthy, the option to complete a MS may be given, but is not guaranteed.

8.8.2. Final Examination and Dissertation Defense: At least three weeks prior to the scheduled date of the examination, the request for the student's final examination must be submitted by the graduate student to the GA who will forward the application to the Graduate School. The final examination and dissertation defense examines the procedure, content and student's understanding of the work presented in the dissertation. This

examination may extend into subject matter related to or distant from the dissertation.

The final examination must be advertised, and both the presentation and the oral examination are open; however, the evaluation portion is closed, and non-members will be asked to leave the room during the discussion. Failure of the final examination requires more than one dissenting vote.

8.9. Duration of Course of Study (Return to Table of Contents)

It is recommended that full-time PhD students complete their study plan and research within four to five academic years and must complete their PhD degree within seven calendar years after matriculation. Students combining a PhD in PBS with a residency program should complete their study plan and research within six academic years. Extension requests must go through the LSU graduate school with the agreement of the student's GRM and GAC.

8.10 Publication Requirements for Dissertation Defense

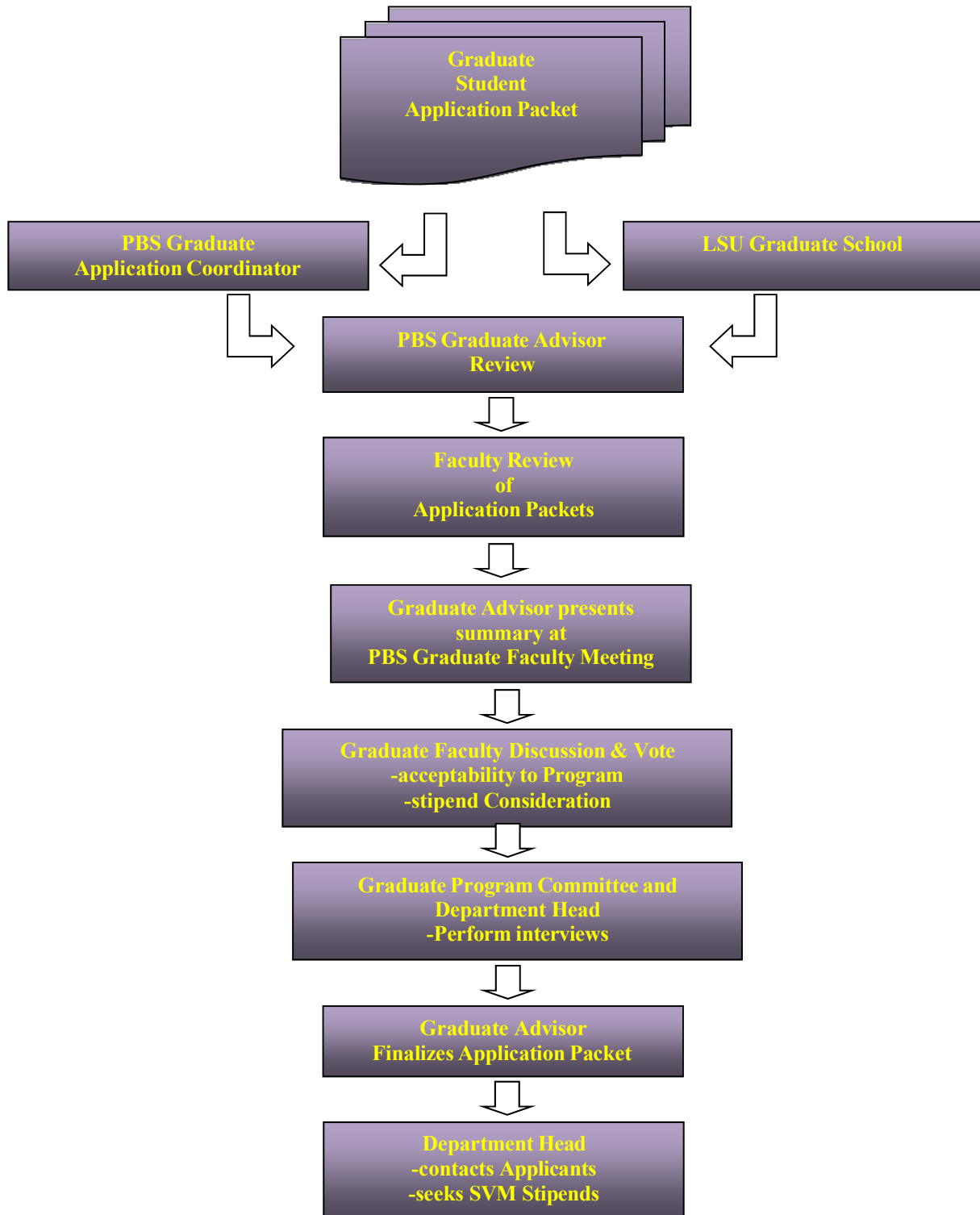
All candidates for the PhD degree must have at least one (1) primary authored, peer-reviewed research publication prior to scheduling the Dissertation Defense. The manuscript must be, "*Published*", "*Accepted*" "*Minor revision*", or "*In Press*". Research publications that are not focused primarily on the research project for the Dissertation Defense, Review articles or commentaries, are not acceptable to fulfill this requirement. In cases of sponsor limitations or embargo, publication requirements can be appeal with documentation to the GPC for approval with the DH final approval.

8.11. Teaching Requirements (Return to Table of Contents)

All candidates for the PhD degree must demonstrate teaching experience. This experience may be gained by either:

- 1) teaching in a laboratory or didactic course related to their discipline specialty (Parasitology, Bacteriology and Mycology, Pathology, Virology, Immunology, Oncology, or Aquatic Animal Diseases) or
 - 2) completion of a didactic course on the theory and/or practice of classroom teaching. If the student participates in laboratory teaching, the course instructor will provide an assessment of these efforts to the GAC.
-
- 1) completion of a didactic course on the theory and/or practice of classroom teaching. If the student
 - 2) participates in laboratory teaching, the course instructor will provide an assessment of these efforts to the GAC.

APPENDIX A
(Return to Table of Contents)
FLOW CHART FOR PBS GRADUATE STUDENT ADMISSION PROCESS



**2APPENDIX B CHECKLIST FOR COMPLETION OF
DEGREE REQUIREMENTS FOR MASTER OF SCIENCE
(BASED ON A 2 YEAR COMPLETION)**

MATRICULATION DATE: _____

TO MEET PBS GUIDELINES:

BY THE END OF MONTH 2

- _____ Choose GRM
- _____ Student sends a written request to the DH and informs the GA of formal GRM assignment.

BY THE END OF SEMESTER 1

- _____ Choose GAC
- _____ Student sends a written request to the DH and informs the GA of formal GAC assignment.

BY THE END OF SEMESTER 2

- _____ Identify a research problem
- _____ Prepare a research proposal
- _____ File a study plan with the GAC
- _____ Have research proposal approved by GAC
- _____ Present seminar of proposed research, preferably at Graduate Student Symposium

COMPLETION OF CORE REQUIREMENTS:

- PBS7003 Basic Immunology (semester): _____
- CBS7104 (semester): _____
- VMED7004 (semester): _____
- PBS7312 (semester): _____
- PBS7004 (semester): _____; _____
- PBS7007 (semester): _____; _____
- SEMINARS Presented (dates): _____; _____
- ANNUAL MEETINGS WITH GAC (dates): _____; _____

APPENDIX B, continued

TO PREPARE FOR GRADUATION:

CHECK WITH THE GRADUATE SCHOOL FOR DATES AND TIMES OF DEADLINES:

Deadline for application for degree: _____

Deadline for request for final examination: _____

Deadline for Examination Report and Submission of Approved Thesis: _____

Graduation: _____

GRADUATION CHECKLIST:

- _____ Complete course work and get approval from GAC and the Graduate School
- _____ Complete research project
- _____ Set date for final examination with GAC
- _____ Set date for final seminar with PBS Seminar Coordinator
- _____ File *Application for Degree* with the Graduate School
- _____ File *Request for Final Exam* with DH and the Graduate School
- _____ Complete thesis and distribute to members of GAC three weeks before examination
- _____ Present Thesis Seminar
- _____ Defend thesis
- _____ Make all thesis corrections and submit thesis and *Committee Examination Report* to the Graduate School
- _____ Submit two bound copies of thesis to PBS and SVM Library

APPENDIX C

**CHECKLIST FOR COMPLETION OF DEGREE REQUIREMENTS FOR DOCTOR OF PHILOSOPHY
(BASED ON A 4 YEAR COMPLETION)**

MATRICULATION DATE: _____

TO MEET PBS GUIDELINES:

BY THE END OF SEMESTER 1

- _____ Choose GRM
- _____ Student sends a written request to the DH and informs the GA of formal GRM assignment

BY THE END OF MONTH 12

- _____ Identify a research problem
- _____ Choose GAC
- _____ Student sends a written request to the DH and informs the GA of formal GAC assignment
- _____ Prepare study and research proposal and have both approved by GAC
- _____ File a *The Program of Study for the Doctoral Student* form with the Graduate School
- _____ Present seminar of proposed research, preferably at Graduate Student Symposium

BY THE END OF MONTH 24 to 32

- _____ Complete course requirements
- _____ Submit "*Request for General Examination*" to DH 4 weeks prior to examination date
- _____ Schedule General Examination

Note: The Graduate School requires that the General Examination be taken within 36 months of matriculation and at least 2 semesters prior to graduation. Check with the Graduate School for deadlines.

- _____ Present work-in-progress seminar of proposed research

COMPLETION OF CORE REQUIREMENTS:

VMED7004 (semester): _____

CBS7104 (semester): _____

PBS7003 Basic Immunology (semester): _____

PBS7003 Grant Writing (semester): _____

PBS7003 Elective (semester): _____

PBS7312 (semester): _____

PBS7004 (semester): _____; _____; _____; _____

PBS7007 (semester): _____; _____; _____; _____

APPENDIX C, continued

SEMINARS Presented (dates): _____; _____

ANNUAL MEETINGS WITH GAC: _____; _____; _____; _____

ANNUAL MEETING WITH GRM: IDP Review _____; _____; _____; _____

TO PREPARE FOR GRADUATION:

CHECK WITH THE GRADUATE SCHOOL FOR DATES AND TIMES OF DEADLINES:

Deadline for application for degree: _____ Deadline for request for final examination: _____

Deadline for Examination Report and submission of Approved Dissertation:

_____ Graduation:

GRADUATION CHECKLIST:

- _____ Complete course work and get approval from GAC and the Graduate School
- _____ Complete research project
- _____ Set date for final examination with GAC
- _____ Set date for final seminar with PBS Seminar Coordinator
- _____ File *Application for Degree* with the Graduate School
- _____ File *Request for Final Exam* with DH and the Graduate School
- _____ Complete dissertation and distribute to members of GAC three weeks before examination
- _____ Present Dissertation Seminar
- _____ Defend dissertation
- _____ Make all dissertation corrections
- _____ Submit dissertation and *Committee Examination Report* to the Graduate School
- _____ Submit two bound copies of the dissertation to PBS

and SVM Library

APPENDIX D: FORMS

The current version of the following forms referred to in the Checklists (Appendix B and C) should be available on the LSU and PBS websites or from the PBS departmental secretary or the Graduate School.

1. *Request for Master's Examination* - 2 copies - yellow
2. *Program of Study for Doctoral Degree* - 2-sided - 2
copies - blue side 1 - Program of Study
side 2 - Probable Further Coursework
3. *Request for Change in Program of Study* - 2 copies - blue
4. *Request for Doctoral General or Final Examination* - 2 copies - blue
5. *Application for Degree - Diploma Page* – white

Graduate Student Assessment Rubric

Please return to the PBS Graduate Advisor (sjois@lsu.edu) or Program Office (PBS 3315)

Student: _____; **Department:** _____; **Date:** _____

This assessment is for Type: _____ (choose from GE, FE, MFE, CRP, RD, OP)

Assessment Type:	Complete These Objectives:				
	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
General Exam (GE, PhD)	X			X	X
Final Exam-Defense of Dissertation (FE, PhD)	X	X	X	X	X
Final Exam-Defense of Thesis (MFE, MS)	X	X	X	X	X
Comprehensive Research Plan (CRP)	X	X	X	X	X
Research Discussions (RD)	X	X	X	X	X
Oral Presentation/Seminar (OP)	X	X	X	X	X

Assessment scale: 0=Unacceptable; 1=Below Average; 2=Average; 3=Good; 4=Superior (upper 5%); NA

Objective 1. Level of Knowledge (GE, FE, MFE, CRP, RD, OP)

	Basic background understanding
	Depth of understanding

Objective 2. Development of Research Plan (FE, MFE, CRP, RD, OP)

	Completeness of the background
	Soundness of the rationale
	Uniqueness of the question
	Hypothesis is clear
	Experimental plan is complete
	Statistical analysis is appropriate
	Feasibility of the research

Objective 3. Research Technology (FE, MFE, CRP, RD, OP)

	Understanding of technology used
	Mastery of technology used

Objective 4. Communication (GE, FE, MFE, CRP, RD, OP)

	Oral communication skills
	Written communication skills

Objective 5. Professionalism and Ethics (GE, FE, MFE, CRP, RD, OP)

	Exhibition of professional courtesy
	Understanding ethical aspects of profession

Comments:

Evaluator: _____; **Signature:** _____
Printed name