



THE UNIVERSITY
OF ARIZONA

STUDENT HANDBOOK
2019-2020

PHYSIOLOGICAL SCIENCES
GRADUATE INTERDISCIPLINARY PROGRAM

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INTRODUCTION

Welcome to the Interdisciplinary Graduate Program in the Physiological Sciences. The purpose of this handbook is to introduce you to the various requirements that must be met before you are granted the Master of Science (M.S.), or Doctor of Philosophy (Ph.D.) degree from the Graduate College of The University of Arizona. The strength of the Physiological Sciences Program derives largely from the flexibility afforded by the interdisciplinary faculty who participate in the Program. This allows each student the freedom to design a unique program of study to meet individual career goals.

However, the flexibility of this Program necessitates careful coordination of your program of study with your mentor, the Program Committee, the Physiological Sciences faculty, and the Graduate College. This handbook should be read upon entering the Program, and used henceforth as a reference regarding the policies and procedures of the Physiological Sciences Program at The University of Arizona.

The Program is intended to provide the foundation for a career in the physiological sciences. To achieve this, the student requires (a) an adequate base knowledge of physiology at the cellular, organ, and systems level, (b) experience and training in research, culminating in a major research project, and c) experience and training in teaching, and in presenting research findings.

The Program is designed for completion of the doctoral degree in about five years, or the master's degree in two years. Obtaining the degree within this time frame depends, in large part, on the motivation and self-discipline of the student. The Program is designed to introduce students to research activities during their first year. By design, the course work requirements are flexible so that the needs of students with diverse areas of specialization can be accommodated. The student, in conjunction with a mentor and the Physiological Sciences Program Committee, designs the individualized program of study.

SCHOLAR'S STATEMENT TO SERVE HUMANITY

In the Pursuit of knowledge, I WILL STRIVE TO:

- MAINTAIN the integrity of the scholarly process and practice my profession with conscience and dignity;
- SHARE my knowledge in an ethical manner for the good of all humanity, and uphold my responsibility for the continued ethical use of this knowledge;
- RESPECT the integrity of my colleagues, while fostering that integrity through critical analysis of research findings;
- ACKNOWLEDGE the contributions of all those involved in the creation of this knowledge, and only take credit for my own contributions;
- RECOGNIZE my moral and ethical obligations to be fair and objective in judging the work of others, and to avoid bias that obstructs valid ideas that differ from my own;
- RECOGNIZE my role as a member of society and respect the questions posed by members of the society that sustains my work;
- KEEP the well-being of those affected by my work and the benefit to humanity foremost in my practice;
- GIVE respect and gratitude to my teachers and to those I teach;
- NOT PERMIT considerations of age, disease or disability, creed, ethnic origin, gender, nationality, political affiliation, race, sexual orientation, or social standing to alter my judgment as a professional;
- MAINTAIN the utmost respect for life.

(Statement adapted from an oath written by Brendan C. Brinkman)

DOCTORAL PROGRAM

Ph.D. Objectives

At the University of Arizona, the Graduate College sets the overall framework for the completion of the doctoral degree. Within these guidelines, the Physiological Sciences Program establishes specific requirements and monitors student progress. The learning objectives for our doctoral students are:

- Demonstrate comprehensive knowledge of physiology at the cellular, organ, and systems level
- Critically analyze published research in his or her area of study to develop key investigative questions in physiology
- Conduct original in-depth research on a significant physiological problem, as evident in presentation of research findings
- Effectively communicate in written and oral form to defend research results in the scientific community

In addition, the guidelines and requirements that are described in this handbook have been established to ensure the protection of student interests and successful completion of the doctoral degree. The student is expected to comply with the regulations of the Graduate College with respect to credit hour requirements and the qualifying and comprehensive examinations (please refer to the Graduate Catalog). A high level of performance is expected of students who are enrolled in graduate programs at The University of Arizona. Students must maintain a grade point average of 3.00 (letter grade of B) or better to receive financial support and to be awarded a Ph.D. degree.

Ph.D. Program Requirements

The Graduate College mandates that 36 hours of coursework, exclusive of dissertation units, half of which must be graded, and must all be completed in the major subject area by all doctoral students. This refers to courses in which regular grades (A/B/C or P) can be earned, and that are numbered at the 500 level or above. 18 Dissertation Units and 9 units (minimum) in a minor area of study are also required.

The courses listed below must be completed by all Physiological Sciences doctoral students. In some cases, certain Program requirements may be waived if equivalent coursework has been completed previously. However, if a waiver is desired, the student must submit a written petition to the Program Committee, which will either grant or deny the waiver. Individual faculty are not authorized to waive any of the Program requirements without prior approval of the Program Committee. Transfer credit from other institutions can be applied to an advanced degree if "approved by the head of the Program, the grade earned is "B" or above, and it was awarded graduate credit at the institution where the work was completed." (For additional information see the UA Graduate College website, <http://grad.arizona.edu/new-and-current-students>). If waivers are granted for coursework taken at other institutions, these courses are referred to as "Transfer Credit" by the Graduate College, and must be listed as such on the Doctoral Plan of Study form

(in UAccess Student, GradPath, after completing the Transfer Credit form). The Doctoral Plan of Study must be filed during the third semester.

Required Coursework:

- Cellular and Molecular Physiology (PSIO 503); 6 units. Through examination of fundamental cellular processes, the integrated function of diverse cell types is discussed. Topics include: mechanisms involved in protein expression, intracellular protein targeting, and regulation of protein function; membrane transport phenomena; cell signaling mechanisms-excitability, ion channels, synaptic function; muscle and vascular function.
- Systems Physiology (PSIO 603A); 6 units. This course in human physiology contains an extended discussion of the Nervous System, Cardiovascular, Renal, Respiratory, Endocrine and Gastrointestinal Physiology presented at the systems level but building on cell and molecular physiology and leading to an integrated view of the function of the human organism. The lectures are designed to introduce individual elements and concepts that constitute physiology, and to integrate these basic principles into a picture of the complete system. Weekly discussion sections compliment the lecture series. The discussion sections focus on primary research articles and problem sets that augment lecture topics.
- Research Methods in Physiological Sciences (PS 700), At least two “rotations” are required, each 3 units (6 units total). Laboratory course providing students with an understanding of the types of research available in the Physiological Sciences GIDP. The purpose of this course will vary with the individual needs and interests of the student. In general, the investigator should not expect the student to complete a major project. Rather, the course provides an opportunity to become acquainted with the ongoing research of the laboratory and to be exposed to the important technical aspects of the work under the tutelage of any regular faculty member with an active appointment in the Physiological Sciences Graduate Program. Laboratory placements with faculty outside of the PS GIDP are not allowed unless petitioned and approved by the Program Committee. As a general rule, the graduate college considers one (1) unit of credit to be equal to three hours of work per week (45 hours/semester/credit). Prior to beginning the course both the student and the faculty member must complete the Research Methods Work Plan form: <http://physiological-sciences.arizona.edu/link-graduate-college-forms>.
- Physiology Student Forum (PS 696C); each semester, 1 unit. This course run by the Physiological Sciences Graduate students must be taken for credit every semester that a student is enrolled in the program, unless there is a class conflict. Student Forum meets for one hour every other week, alternating with Seminar. After the first year, Ph.D. students are expected to present each year: Year 2 & 3, give a 20 minute presentation; year 4, a full 40 minute presentation; year 5, dissertation defense. Mentors will attend their student’s forum presentation. Student attendance will be taken at each Student Forum.

- Departmental Seminar (PSIO 696A), each semester, 1 unit. This course must be taken for credit every semester unless there is a class conflict. It meets for one hour every other week, alternating with Forum.
- Ethics Course (1 semester of an upper division course, 500 level or above); 2-3 units
Suggested Courses:
 Scientific Writing Strategies, Skills and Ethics (PS 595b); 2 units. Provide students with skills to write and communicate effectively for a variety of scientific audiences; including scientific journals, funding institutions, potential employers as well as administration in academia and industry.

or

 Survival Skills and Ethics (SLHS 649); 3 credits. Designed for graduate students and postdoctoral fellows. It provides information and experiences that will aid in successful "survival" during the graduate-student years and those following graduation. Topics include effective speaking and writing, grantsmanship, mentoring, teaching, career options, among others. Discussion of ethical issues and resources is integrated across topics.
- Statistics Course (1 semester of an upper division course, 500 level or above); 3 units.
 Suggested courses: EPID 576a Biostatistics, Math 509C Statistics for Research, PHL 576 Biostatistics for Public Health, PSIO 575 Statistical Analysis. PSY 507A, 507B, 507C Statistical Methods I, II, III. Other syllabi may be considered by the Program Committee for approval.
- Physiological Sciences Teaching Workshop (PS 697A); 1 unit, Fall Semester Only.
 Theoretical background on learning/teaching; Handy hints from good teachers; Development of teaching philosophy and techniques.

The remaining units must be in physiology or in closely related disciplines. The additional courses should be selected by the student in consultation with a mentor. The courses chosen should be based on the student's individual interests and area of specialization. The format of these additional courses could include colloquia, tutorials, or formal courses offered by a variety of other departments. A program of study should be developed as soon as possible. If the student and mentor decide to alter their original goals, a modified "Plan of Study" form will need to be submitted through GradPath.

Minor Requirement

The Graduate College requires all Ph.D. students to complete a "minor" program of study. Successful completion of a minor field of study is determined by the department in which the minor is obtained. The student who chooses to major and minor in Physiological Sciences must complete 9 units of additional formal graded course work in any area of Physiological Sciences (excluding seminars and lab rotations).

Minor in Physiological Sciences

Students majoring in another discipline who desire a minor in Physiological Sciences must complete a minimum of 9 units. Students must complete PSIO 503 or 603A, and can register for PSIO 696A and PS 696C, forum and seminar for 2 semesters/3 credits to make 9 credits. The minor will not be granted if the student fails to maintain a B average (GPA of 3.0) for these courses.

First Author Publication Requirement

The Physiological Sciences Graduate Program recognizes the importance of writing and submitting a manuscript, plus responding to reviewer criticisms, as an essential part of a doctoral student's scientific training. As a condition of graduation, it is expected that every doctoral student in the Physiological Sciences Graduate Program publish at least one manuscript in which s/he appears as first author and is the primary contributor.

The Qualifying Examination

The "Qualifying Examination", involves obtaining a grade of B or better in both PSIO 503 and PSIO 603. If a student fails this examination (i.e., receives a grade of C or lower in either course), the Program Committee and course faculty will decide whether or not the student will be allowed to re take the course. If the student is allowed to re-take the course and fails to receive a grade of B or better the student will be dismissed from the Program.

Teaching in the Ph.D. Program

The Physiological Sciences Graduate Program participates in a broad selection of teaching activities. The faculty members believe that teaching, and the communication skills it develops, is a central part of graduate training. **Indeed, all students in the Ph.D. program are required to participate in teaching activities as an integral element of the training program.** The current model has our first year Doctoral Students teaching two sections of PSIO 201/202 Anatomy/Physiology in one semester (either Fall or Spring). The Undergraduate Director in the department of Physiology makes the official assignments based on the student's academic background and an interview. In order to provide feedback and to recognize teaching excellence, teaching performance is evaluated based on input from faculty and students.

Students who enter the PSGIDP via ABBS will teach a single semester during their second year of studies.

Ph.D. Program Timeline

The following is the general time frame in which most students progress through the Ph.D. Program in Physiological Sciences. A Checklist is provided in Appendix III to help you keep track.

Year 1

- Submit Responsible Conduct of Research Statement GradPath form.
- Complete two Research Methods Work Plan form for the Fall and Spring terms: One at the beginning of each term and one at the end of each term.
- Attend Forum and Seminar for both semesters.
- Complete Teaching Assistantship.
- Complete the Qualifying Exam by satisfactorily passing PSIO 503 and 603A (grade of "B" or better)
- Complete Scientific Writing Strategies, Skills and Ethics (PSIO 595b) 2 credits OR Survival Skills and Ethics (SLHS 649) 3 credits with a grade of "B" or better.
- Complete at least two rotations (PS 700) in the laboratories of your choice. (Submit completed Research Methods Work Plan forms (at the beginning and end of each rotation: <http://physiological-sciences.arizona.edu/link-graduate-college-forms>.)
- Choose a faculty mentor and join a lab for the remainder of the program. To formalize your selection, you must submit the "Mentor Selection Form" (<http://physiological-sciences.arizona.edu/link-graduate-college-forms>) with the appropriate signatures. See additional information under "Mentor Selection".

Year 2

- Complete coursework for Major and Minor.
- Attend forum and seminar for both semesters
- Complete the first 20-30 minute Student Forum Presentation.
- Complete all coursework for both the Major and Minor.
- Form a Comprehensive Examination Committee and meet during the year.
- Complete GradPath Forms:
 - Fall Term: Plan of Study. You and your mentor (or preceptor) should work on this together. (Detailed instructions are in Appendix V.) This form should be revised and resubmitted if changes occur throughout your graduate studies.
 - Spring Term: Comprehensive Examination Committee form.
 - Summer Term: Announcement of Doctoral Comprehensive Exam form.
- Begin the process of formulating a research project, conducting preliminary experiments, and considering members to serve on your dissertation committee.
- **Complete the Comprehensive Examination by the end of Year 2.** Note that to remain eligible for Program funding, you must complete the Comprehensive Examination by the end of the fifth semester, in Year 3. In exceptional circumstances students may petition the Program Committee for an extension of the deadline.

Year 3

- Attend Forum and Seminar, both semesters.
- Complete the second 20-30 minute Student Forum Presentation.
- Form Dissertation Committee (which may be different from your Comprehensive Examination Committee). Note that students are required to meet with their dissertation committee at least once per year, but more frequent meetings are recommended.
- **Complete Dissertation Proposal, gain approval from Dissertation Committee, and submit to the Program Coordinator.**
- Complete GradPath Forms: Doctoral Dissertation Committee Appointment and Prospectus/Proposal Confirmation.
- Attend a national meeting.

Year 4

- Attend forum and seminar, both semesters.
- Complete full length (at least 40 minutes) Student Forum Presentation.

Year 5

- Attend forum and seminar, both semester.
- Complete Dissertation (Work with your mentor on the organization of your dissertation and obtain the formatting manual for Theses and Dissertations from the Graduate College: <http://grad.arizona.edu/gsas>. It is the responsibility of your mentor to proof your dissertation.)
- Schedule at least one meeting per year with the dissertation committee; more frequent meetings are recommended. The Program Committee will evaluate student progress each year using input from both the student and the mentor.
- Complete the last GradPath form: Announcement of Final Oral Defense. This form must be submitted **at least 10 days before the date of your defense**. The completion of this form assumes that your dissertation manuscript has been accepted by all your committee members. Therefore, penultimate copies of your completed dissertation manuscript must be distributed to your committee members with enough time to review before you submit this form; typically two weeks.
- Defend Dissertation
- Submit Approved Final Dissertation to ProQuest: After passing your final exam, the final dissertation must be submitted via the electronic submission site at <http://grad.arizona.edu/gsas/dissertaions-theses/submitting-your-dissertation> and must meet all specifications of the dissertation manual.

It is the intent of the Physiological Sciences Graduate Program to provide financial support utilizing a combination of Program funds and mentor contributions with the stipulation that adequate progress is being made towards the degree. The Program Committee will evaluate student progress each year using input from both the student and mentor. (See below)

Selection of Mentor

Each student must select a mentor from the PS GIDP faculty with regular member status by the completion of their second semester in the program. A mentor is a faculty member who will serve as an advisor, supporter, tutor, supervisor, sponsor and role model. A mentor is expected to interact with the student on a regular basis (**i.e. weekly**) providing guidance, advice, and the intellectual challenge necessary for the student to complete the degree program. The following suggestions may be of assistance to graduate students in choosing a mentor. There are two broad areas that come into play when choosing a mentor. The first area has a professional basis and the second a personal basis. The choice of a mentor may be the single most important decision during graduate training.

When considering the professional aspects of your selection of a mentor, the following questions may prove helpful:

- What is this individual's reputation OUTSIDE the University? Remember, when you have completed your dissertation and you are looking for a position, your mentor's reputation will initially be your reputation.
- Does your prospective mentor have the funding available to support your research for at least three years? This area is probably the most problematic for graduate students. The money needed to fund your research project will most likely come from your mentor's laboratory. Also, although your stipend money is relatively stable, the mentor is expected to contribute an amount equal to one half of your stipend to the Physiological Sciences Program. Therefore, you will need to know not only the amount of money available for your research but also the stability of funding.
- How does your prospective mentor's lab operate? You should critically evaluate the day to day operations of the lab and understand the goals of the lab and where you will "fit in". You should also understand the role of your mentor in those operations. Some principal investigators have lab managers or research assistants who run the laboratory. You should know almost as much about these individuals as about your prospective mentor.
- What are the professional requirements of the prospective mentor? Consider such issues as work habits, ethics, sharing of ideas, lab meetings, journal clubs, and authorship on papers.
- Does your mentor attend student forum on a regular basis? This is where you receive input and mentoring on giving talks and answering questions on your research. Faculty give feedback to all students in the program. Your mentor should be committee to attending student forum on a regular basis.

The following questions may be extremely helpful:

- Is the personality of my prospective mentor compatible with my own?
- Is this individual going to be responsive to my needs and, just as important, am I going to be responsive to his or her needs? When you join a lab, your mentor will have certain expectations of you and these should be identified when evaluating a prospective mentor. By the same token, what are your expectations of a mentor?

- What do other students and faculty think about your prospective mentor? The collegial relationship of your prospective mentor with others will influence your interaction with other laboratories.

Do not forget the importance of the choice of a mentor and do not make that choice without a great deal of thought. Talk to other people about your prospective mentor and ask probing, but not inflammatory, questions. And provide yourself with HONEST answers to both the professional and personal aspects of your decision. Once you have identified a mentor, the Program Office must be informed of this selection in writing by you and your mentor.

Selection of Committees

The composition of the Comprehensive Exam Committee and the Dissertation Committee is most often the same. However, in certain cases, the compositions may be different. For example, a student's dissertation project may deal with a topic that is unrelated to the minor. In this case, the faculty representing the minor would serve on the Comprehensive Exam Committee but not on the Dissertation Committee.

The student, in consultation with the mentor, should select the Comprehensive Examination Committee. The Comprehensive Examination Committee is composed of five faculty members, three with expertise in the major area of study, and two representing the minor area. At least two members of the committee must be faculty members of the Physiological Sciences Program, and one from the faculty of the minor department or program. (Note that some PS faculty members are in multiple graduate programs, and therefore can serve multiple roles on your committee.) At least three of the four committee members must be current tenured or tenure track faculty.

Special Members

Outstanding scholars from within or outside the University whose participation on the Comprehensive (and Dissertation) committee(s) will strengthen the academic quality of the student's program, and who are not faculty in Physiological Sciences, may be appointed, by exception, with the approval of the Graduate College. A request for "special committee member" can be made by the Program. This person is then a voting member of the student's committee. For tenure track faculty in other programs, there is no special approval needed. For non-tenure track faculty, or for faculty from other universities, a "Request to Approve a Special Committee Member" form along with an updated curriculum vitae are submitted to the Graduate College by the Program Coordinator. Contact the Program Office in this circumstance.

External Reviewer

Occasionally an external reviewer may participate on the dissertation committee. Most often this person is from outside the University of Arizona. It is expected that the mentor cover any and all costs incurred in the participation by the External Reviewer. This external reviewer is not a voting member of the student's committee (unless the student petitions the graduate college for Special Membership, as noted above).

*** The Student is strongly encouraged to meet with the dissertation committee twice a year, but is required to meet at least once per year to allow an evaluation of progress and to receive feedback.

Comprehensive Examination

Overview of the Comprehensive Examination

The Comprehensive Examination consists of written and oral components as required by the Graduate College of the University of Arizona. As discussed in detail below, students in Physiological Sciences will ordinarily complete the written and oral components of the Comprehensive Examination by the end of the 4th semester in the Program.

The examination must evaluate the student's breadth of knowledge in Physiological Sciences, but should also reflect the specialized interests that each student has developed by this stage. To ensure that all levels of understanding in Physiological Sciences are addressed, the field has been divided into I. Systems Physiology, and II. Cell/Molecular Physiology.

Objectives of the Comprehensive Examination

The objectives of the Comprehensive Examination are:

- To determine if the student has attained adequate breadth of knowledge in physiological sciences. An adequate breadth of knowledge reflects the material covered in the required courses (503 and 603), as well as in the courses that satisfy the minor degree.
- To determine whether the student has attained a sufficient depth of knowledge in selected sub-disciplines of physiological sciences, including knowledge of the literature, concepts and experimental approaches in the area of specialization.
- To assess the student's ability to think clearly and independently about topics in the physiological sciences and to express these thoughts orally and in writing.
- To satisfy Graduate College requirements.

Timing of the Comprehensive Examination

The Comprehensive Examination will ordinarily take place during the student's fourth semester or early in the summer before the fifth semester in the Program. To remain eligible for funding from the Program, students must complete the written and oral portions of the Comprehensive Examination by the end of the 5th semester. In exceptional circumstances, such as illness or a family crisis, students may petition the Program Committee for extension of the deadline.

The Comprehensive Examination Committee

During the 3rd semester in the program (Fall of Year 2) students will select a Comprehensive Examination Committee. As described above, this committee will consist of 5 members (including the advisor), selected to reflect the student's minor and area of interest in Physiological Sciences, as well as the anticipated make-up of the Comprehensive Examination (see below). The committee must have at least three members who are current and tenured or tenure equivalent/eligible. Additional members may be voting members if they are Special

Members or are current and tenured (or tenure equivalent/eligible). A member of the committee other than the major advisor (mentor) will serve as chair. The Program will provide the committee chair with the “Comprehensive Exam Committee Chair Checklist.” (Appendix II) The chair will collate questions for the written portion of the Examination and chair meetings of the Committee.

The student will arrange a meeting of the Comprehensive Examination Committee at least 6 weeks prior to the anticipated date of the Written Comprehensive Examination, to allow introductions and to discuss the timing, format and content of the written and oral portions of the Examination. At this meeting the general research interests and background (rotations, courses) of the student will be discussed. The student and committee will discuss a time-table for the Comprehensive Examination. The Committee will inform the student of its general expectations and help the student to prepare for the Examination by suggesting review articles or other readings. There is no substitute for helpful communication between the student and Comprehensive Examination Committee as the questions are being planned and the student is preparing for them.

The Written Comprehensive Examination

The Written Comprehensive Examination will be in a take-home, essay format. The members of the student’s Comprehensive Examination Committee discuss the areas to be covered by the exam and the Committee Chair will assign members to write three questions in systems physiology and three questions in cell/molecular physiology. The questions should not focus specifically on the student’s prospective dissertation topic, but may include related areas that form the essential background for it. These essay questions should be designed for the students to answer over a two-week period using information from textbooks, journals and class notes.

The Committee Chair should submit the committee’s questions to the Program Committee at least 2 weeks in advance of the Examination. The Program Committee will review the questions to ensure that there is a reasonable degree of uniformity among the examinations given to all students. Questions from former examinations will be kept on file for the use of students and faculty. The Program Office must be included on all communication regarding the students’ comprehensive exams in order to keep record for the Program. If the student's minor area of study is in a department outside of Physiological Sciences, the graduate college gives the Minor Department the option of waiving participation in the written portion of the comprehensive examination. However, the Minor Department must participate in the oral portion of the comprehensive examination.

Students will be provided with three cell/molecular and three systems physiology questions. The student must select two questions from each category and will have two weeks to complete the four answers. The answer to each question should be no more than 10 single-spaced pages using 12 point font (including graphs and figures, but not references). Students are expected to use textbooks, journal articles, class notes and similar sources of information to prepare essays in answer to the questions. The essays should include graphs or other figures as necessary to illustrate answers. All direct quotes or figures drawn from other sources must include proper

citations. Students may not consult other people in preparing their answers. All figures and legends must be legible. Page limits and font size requirements will be strictly enforced.

Results of the written comprehensive exam should be supplied to the student and Program Coordinator one week after answers have been submitted. The answers will be graded by the Committee members who wrote the questions. Members will send the grade to the Chair of the Comprehensive exam committee (not the mentor) and s/he will enter the grades on the assessment sheet provided by the program (Appendix III). Students will receive a grade (S/P/F) and written comments and are encouraged to discuss comments with the grader. A passing grade (S or P) for each of the answers is necessary for successful completion of the Examination. Failure to achieve this will constitute failure of the Written Comprehensive Examination. The entire Examination may be retaken once, after mentoring by Committee members (ordinarily within one month). If both questions in one category are passed, the retake exam may focus only on the failed category, if agreed upon by the entire committee. These two retake questions will be answered over a one week period. Failure in the second attempt will constitute failure of the Written Comprehensive Examination. Failure of the Comprehensive Examination will result in dismissal from the Program.

*** Prior to taking the comprehensive exams, the student must begin the GradPath online form process. The “Responsible Conduct of Research form” and “Plan of Study” must be submitted first, in that order. Once approved, the “Comprehensive Examination Committee Appointment Form” and the “Announcement of Doctoral Comprehensive Exam” form” can be submitted in that order. The announcement form will schedule your oral comprehensive exam with the Graduate College. Once your Oral Exam is completed, the chair of your committee will post the results in GradPath.

The Oral Comprehensive Examination

Upon successful completion of the Written Comprehensive Examination, the student and committee may schedule the oral portion. The Graduate College describes the oral comprehensive exam as follows: “Upon successful completion of the written examinations in the major and minor(s), the Oral Comprehensive Examination is conducted before the examining committee of the faculty. This is the occasion when faculty committee members have both the opportunity and obligation to require the student to display a broad knowledge of the chosen field of study and sufficient depth of understanding in areas of specialization. Although a discussion of proposed dissertation research may be of importance, such a discussion cannot be used to satisfy the requirements of the Oral Comprehensive Examination. The examining committee must attest that the student has demonstrated the professional level of knowledge expected of a junior academic colleague.”

Students should be aware that during the oral examination committee members often pursue answers from the written examination in more depth or may ask the questions that the student chose not to answer.

The Oral Comprehensive Examination must be completed **not less than 3 weeks and not more than 6 months after the written portion**. The exam will last between 2 and 3 hours. The examination will consist 50-70 % of questions in physiological sciences with emphasis on the student's area of specialization, and 30-50 % of questions in the minor (which may overlap). The student should be prepared to answer questions not only related to topics previously discussed with the committee, but also related to material covered in the required core courses. Students have found that an excellent way to prepare for the oral exam is to hold mock exams in their laboratory. The students' mentor can organize these mock exams and other students can serve as questioners. The questions will not be the same as the student will get in the oral, but will help the student prepare for thinking on his or her feet. Students may not bring notes into the examination. Once completed, the student's committee chair (not the mentor) serves as the Graduate College reporter and representative for the written and oral exams by submitting the "Results of Comprehensive Exam" GradPath form immediately following completion of the oral exam. Students may be permitted to retake the Oral Comprehensive Examination once should they receive more than one fail vote from their committee in the first attempt. The Graduate College stipulates a 4 month waiting period in this situation.

Advancement to Candidacy

After successful completion of the comprehensive written and oral examinations, and the Graduate College has confirmed that the student has completed the required courses listed on the "Plan of Study" GradPath form for both the Major and Minor, the student will be advanced to doctoral candidacy. This means that the student may focus on the dissertation for graduation.

The Dissertation

The Dissertation Committee

Students should select a Dissertation Committee by the end of the 5th semester. The Dissertation Committee must meet with the student at least once each year. There is no obligation for the student to convene the same faculty members on their Comprehensive Examination and Dissertation Committees. The Dissertation Committee must have at least three faculty members that are active and tenured (or tenure eligible/equivalent), but students may add additional members to the committee. The additional members may be voting members as long as they are either current tenured faculty (or tenure eligible/equivalent) or approved Special Members. Per the Graduate College, if a committee has only three members, all must approve the dissertation.

The Dissertation Proposal

During the 3rd year (semesters 5 and 6) students MUST complete and present to their proposal to their Dissertation Committee. **The proposal should provide a compelling rationale and a research plan for the dissertation topic.** The Dissertation Proposal is a key requirement of the Physiological Sciences training program providing a valuable opportunity for students to develop grant writing skills and to receive feedback from their committees at a relatively early stage of the experiments. The goal is to develop a rigorous and feasible experimental plan that will serve as a guide for the dissertation research, although the experiments may be modified if necessary as the work proceeds. The proposal should be written similar to the NIH format but with the following page guidelines (single spaced): Specific Aims/Hypotheses (1-2), Background and

significance (2-3), Preliminary data (2-3) Experimental Design (8-10), Literature Cited (as necessary).

The completed draft of the proposal should be provided to the Dissertation Committee members for comment and a meeting of the student and the committee should take place at which the student will field questions about the rationale, design, and interpretation of the proposed experiments. Once the Dissertation Proposal has been revised to the satisfaction of all members of the Dissertation Committee, the members of this committee will sign the “Dissertation Proposal Approval” form (<http://physiological-sciences.arizona.edu/link-graduate-college-forms>). A copy of this form is then submitted to the Program Office to be included in the student’s annual performance review.

After the Dissertation Proposal has been accepted, the student is expected to submit copies of the draft of the dissertation to the committee. The student so be sure to allow adequate time for the committee to review and prepare the student for the final draft. The Doctoral Dissertation Formatting Guide may be found on the Graduate College’s website:

<http://grad.arizona.edu/gsas/dissertations-theses/dissertation-and-thesis-formatting-guides>.

The Final Examination

The final examination is your oral dissertation defense. The date, time, and location must be determined with your Dissertation Committee, and the “Announcement of Final Oral Defense” GradPath form must be submitted at least 10 days prior to the date of your examination.

If the student “Passes with Revisions” for the Final Examination, the student must make the requested revisions and resubmit the dissertation to the committee for approval. Once final approval has been given and the final draft has been prepared, the student must submit the official dissertation via the electronic submission site (<http://grad.arizona.edu/gsas/dissertations-theses/submitting-your-dissertation>) before the Graduate College Deadline. The deadlines change every term and may be found on the Graduate College website:

<http://grad.arizona.edu/gsas/degree-requirements/important-degree-dates-and-deadlines>. It is also expected that the student provide an electronic copy for the Program Office to keep for the Program’s record.

***** Ph.D. students must be registered during the Fall or Spring term in which they are expected to graduate. However, Summer and Winter registration are not required.**

Terminal Master’s Degree Option for Ph.D. Students Who Are Not Progressing to a Ph.D.

Students enrolled in the doctoral program who wish to obtain the Terminal MS degree in Physiological Sciences are expected to complete the following five requirements:

1. Contact Program Committee (copy Program Chair and Program Coordinator) in writing of intention/circumstances to obtain a MS, not a Ph.D.
2. Passed Ph.D. coursework with B grade or above in each course.

3. Form a MS committee comprised of three members, two faculty of which are from Physiological Sciences; and alert the Program Committee of your intentions, and the makeup of your committee by submitting the "Master's Committee Form" (<http://physiological-sciences.arizona.edu/link-graduate-college-forms>).
4. Passed qualifying comprehensive exams (written and oral)
5. Demonstrate scientific insight/integrative thinking (three options)
 - a. Write a critical literature review
 - b. Write a dissertation proposal
 - c. Write a first author manuscript

Student must orally defend one of options in requirement # 5.

Specific content of written portion of MS requirement for students enrolled in PhD program are established on a case-by-case basis by the student's MS committee.

Financial Structure of the Doctoral Program

The funds utilized by the Program to support the doctoral student stipends are derived from NIH Training Grants, Graduate College Fellowships, Teaching Assistantships, and faculty contributions. In general, these funds dictate the number of students supported by the Program. The graduate students in the Program are supported by training grants (Cardiovascular Physiology and others) and by teaching and research assistantships.

It is the intention of the Physiological Sciences program to provide at least partial support for full time predoctoral students who are in good standing in the program for five consecutive years. However, because of uncertainties in funding sources, this support cannot be construed as a guarantee of continuous support to any student. The five year period begins with the year of admission into the program, and barring exceptional circumstances is limited to five years regardless of the actual source of support for the student during that period. Support ends at the time of graduation (with congratulations!) if the student finishes in less than five years.

The Partial support from the Program can be in the form of a stipend, health insurance and tuition coverage. The program covers the first year of all PS GIDP students, unless the student arrives with an independent fellowship (IMSD etc). Once a mentor is selected the student salary is provided by the student's major adviser (either by a position on a training grant or a research assistantship). The program may cover tuition if Graduate Tuition Scholarships can be used, depending on the mentor's funding source. Students will not be allowed to join a laboratory that does not have ongoing support.

Stipends

The level of graduate-student stipends is set by the NIH guidelines. The program sets this salary level in April every year for the oncoming year. If a student has external funding the student and mentor can negotiate a rate above the PSGIDP set level. However all faculty are expected to pay the minimum PS GIDP stipend level to their students.

Competitive Predoctoral Fellowships

The Program encourages individual students to seek supplementary funding. The advantages of seeking predoctoral fellowships are that it provides you with an opportunity to develop grant-writing skills, it brings prestige to you and the Program, it enables us to recruit more students into the Program, and it enables you to supplement (increase) your stipend. The Resources Committee can provide guidance in this endeavor by identifying potential funding agencies. The proposal, however, should be written in consultation with your mentor or with the advice of the Resources Committee.

Scientific Conferences

The Program encourages students to attend and present their research at scientific conferences by authoring a “first author” poster or talk at a national meeting. The program encourages students to apply for GIDP travel awards, Herb Carter, and Graduate Student Council Awards, all of which require the student be a first author on a submitted abstract. The program will send out these announcements when received from the Graduate College. Depending on the availability of funds, the Program attempts to defray the costs for students who are attending and presenting a “first author” poster or talk at one national meeting per year. Specifically, the Program may contribute to the costs associated with travel, lodging, meals and registration fees. Students must be a first-author presenter. Travel Request Forms are available in the Program Office.

THE MD-PHD DUAL DEGREE PROGRAM

The MD-PhD Dual Degree Program in Physiological Sciences (PS) prepares students for academic careers involving research and teaching, as well as other careers where systems and molecular physiology research training is required (biotechnology, government laboratories, industry, and health-related organizations).

Dual Degree Objectives

The Association of American Medical College summarizes the objective of an advanced dual degree: “The MD-PhD training organizes the experimental and clinical thinking of the physician-scientist. This synergy enables a physician-scientist to recognize new ways that clinical care or the understanding of disease mechanisms will benefit from research and to mount the appropriate effort. Likewise, the synergy achieved in dual-degree training enables the physician-scientist to see how the results of research discoveries and insights can be converted into clinically significant outcomes.”

The goal of the University of Arizona MD and PS PhD Dual Degree Program is to provide outstanding aspiring physician scientists with biomedical training so that they emerge as leaders in both academic medicine and research. Students accomplish this by spending the first two academic years exclusively in the College of Medicine, followed by 3-4 years of interdisciplinary doctoral training in Physiological Sciences. Upon successful completion of a PhD thesis, students then return to the College of Medicine and complete their final two years of clinical training.

Candidates are admitted independently to the College of Medicine and the Physiological Sciences Graduate Interdisciplinary Program, Graduate College. Although the time to completion of both programs, combined is usually nine years, the PS PhD/MD Dual Degree Program makes it possible to complete both degree objectives in 7-8 years. This is accomplished by counting certain units of College of Medicine course in the Physiological Sciences study program.

Dual Degree Program Requirements

Dual degree applicants must meet the application deadlines and testing requirements to each program independently. Students pursuing the dual degree will spend the first two academic years exclusively in the College of Medicine, followed by completion of graduate course work and dissertation research, and then by completion of the clinical medical school requirements.

Fees

The MD/PhD Program provides students with tuition and a yearly stipend for the medical school years. The graduate program and laboratory the student joins will cover graduate tuition and provide a stipend during the PhD years.

Required Coursework

Doctoral students must complete 36 units of graduate-level coursework. 18 units must be in the major subject area, must be taken as letter-grade, and must be courses at the 500-level or greater. 18 dissertation credits are required, as are at least 9 units of coursework for the minor, depending on the requirements of the minor program. In total, the MD-PhD student will complete 63 units.

- Combined Credit – Units credited to both degrees (9 units)
 - 9 units of Medical School curriculum will be accepted by the Graduate College as counting towards the PhD in Physiological Sciences.
- Ph.D. Courses/Credits – Course descriptions are in the [PhD Program Requirements](#) section of this handbook (32 units, 26 A/B/C and 6 S/P/F)
 - PSIO 503 Molecular Physiology: 6 units (A/B/C)
 - PS/PSIO 696C Physiological Sciences Student Forum: 6 units (A/B/C)
 - PS/PSIO 696A Physiology Seminar: 6 units (A/B/C)
 - PS 595b Scientific Writing Strategies, Skills and Ethics: 2 units (A/B/C)
 - One semester of Statistics: 3 units (A/B/C). Suggested courses:
 - PHL 576, Biostatistics for Public Health
 - EPID 576a, Biostatistics
 - Math 509C, Statistics for Research
 - PSIO 575, Statistical Analysis
 - PSY 507A, 507B, *or* 507C Statistical Methods I, II, *or* III.
 - PS 700 Research Methods in Physiology: 3 units (A/B/C)
 - PS 900 Research: 6 units (S/P/F)
- MD Courses Used for the PhD Major
 - Any 9 credits from MED 806, 807, 808
- MD Courses for PhD Minor – Credits from the following first year curriculum courses:
 - MED 803, 804, 805: 9 units
- PSIO 920 Dissertation Credits: 18 units (S/P/F)
- Physiology Student Forum (PS 696C); each semester, 1 unit. This course run by the Physiological Sciences Graduate students must be taken for credit every semester that a student is enrolled in the program, unless there is a class conflict. Student Forum meets for one hour every other week, alternating with Seminar. After the first year, M.D., Ph.D. students are expected to present two forums, one 20 minute presentation in year 4 and a full 40 minute presentation in year 5. Mentors will attend their student's forum presentation. Student and faculty attendance will be taken at each Student Forum.

Dual Degree Program Timeline

A summary of the structure of the combined program is detailed below.

Preclerkship Phase of Medical School: (18 months)

- Coursework for the first 2 semesters (12 months): Courses may be used for graduate credit upon request and approval.
 - MED 802 - Foundations (6 weeks)
 - MED 804 - Musculoskeletal System (6 weeks)
 - MED 803 - Nervous System (9 weeks)
 - MED 805 - Cardiovascular, Pulmonary, Renal Systems (11 weeks)
 - MED 806 DMH - Digestion, Metabolism & Hormones (9 weeks)
- Coursework for the next semester (6 months): Courses may be used for graduate credit upon request and approval.
 - MED 808 - Life Cycle (7 weeks)
 - MED 807 - Immunity and Infection (8 weeks)
 - MED 809 - Advanced Topics (4 weeks)
- Following the 18 month preclerkship phase, complete Step 1 United States Medical Licensing Exam (USMLE)

First Year of Ph.D. (Start Spring Semester, 2nd year of dual degree program)

- Coursework:
 - PSIO 503 Molecular Physiology (6 credits)
 - PS 696C Physiological Sciences Student Forum (2 credits)
 - PSIO 696A Physiology Seminar Program (2 credits)
 - PS 700 Research Methods in Physiology (3 credits)
 - PS 900 Research (3 credits)
- Form Comprehensive Exam Committee.
- Complete Comprehensive Exams by end of winter of 1st year in PhD program (Requirements listed in the [Comprehensive Examination](#) section of this handbook.)

Second Year of Ph.D.

- Coursework:
 - PS 696C Physiological Sciences Student Forum (2 credits)
 - PSIO 696A Physiology Seminar Program (2 credits)
 - PS 595b Scientific Writing Strategies, Skills and Ethics (2 credits)
 - Statistics (3 credits) from following:
 - PHL 576, Biostatistics for Public Health
 - EPID 576a Biostatistics
 - Math 509C, Statistics for Research
 - PSIO 575, Statistical Analysis
 - PSY 507A, 507B, or 507C Statistical Methods I, II, or III.
 - PS 900 Research (3 credits)

- PSIO 920 Dissertation (6 credits)
- Form Dissertation Committee, Complete Dissertation Proposal

Third Year of Ph.D.

- Coursework:
 - PS 696C Physiological Sciences Student Forum (2 credits)
 - PSIO 696A Physiology Seminar Program (2 credits)
 - PSIO 920 Dissertation (12 credits)
- Complete Dissertation Defense

*** Additional PhD years, as needed: PS 696C Physiological Sciences Student Forum (2 credits), PSIO 696A Physiology Seminar Program (2 credits), PSIO 920 Dissertation (12 credits)

Clerkship Phase of Medical School (12 months)

Transition to Clerkships (1 week)

- Intersessions (2 weeks)
- 7 Required Clerkships and Ambulatory Medicine
 - Neurology (4 weeks), Psychiatry (6 weeks), , , Obstetrics and Gynecology (6 weeks), Surgery (8 weeks), Medicine (8 weeks), Pediatrics (6 weeks), Family and Community Medicine (6 weeks), Ambulatory medicine (4 weeks)
- Complete Step 2 United States Medical Licensing Exam (USMLE)

Transition to residency Phase (56 weeks)

- 44 units in UACOM-T are required for graduation
 - Core Sub-Internship rotation (4 weeks)
 - Integrated EM/CC rotation (4 weeks)
 - Surgery Specialty Selective (4 weeks)
 - Applications of the Basic Sciences to Clinical Medicine Course (4 weeks)
- 28 units of Elective courses/rotations (less if other units/credits accumulated)
- Enter the Residency Match Process
- Complete Residency Interviews

MASTER'S PROGRAM

Master's Objectives

The mission of the two-year Master's Program is to provide an avenue for the student to gain more experience in and exposure to the diverse areas of the physiological sciences and to offer a mechanism for the student to obtain in-depth knowledge in a specific area of physiology. The learning objectives for our doctoral students are:

- Demonstrate in-depth knowledge of diverse areas of physiology at the cellular, organ, and systems level
- Conduct original research in a specific area of study in physiology
- Effectively communicate research results in written and oral presentation

To this end, opportunities can be provided for students to gain experience in teaching appropriate undergraduate courses in the physiological sciences and/or to participate in a specific research project in the laboratory of a Physiological Sciences faculty member.

Prospective students should consider carefully the possible advantages and disadvantages of the Master's program in comparison with the Ph.D. program in Physiological Sciences. Information and guidance in this decision are available from the Program office.

*** All faculty members of the Physiological Sciences GIDP are eligible to participate fully in the M.S. Program as committee members and as major advisors/research project directors (i.e., mentors).

Master's Program Requirements

The Graduate College mandates that 30 hours of coursework, 24 hours of which must be non-thesis credits, in which regular grades (A/B/C or P) can be earned, and are numbered at the 500 level or above. Master's students are expected to complete this coursework and a research project within two years, barring exceptional circumstances.

The courses listed below must be completed by all Physiological Sciences Master's students. In some cases, certain Program requirements may be waived if equivalent coursework has been completed previously. However, if a waiver is desired, the student must submit a written petition to the Program Committee, which will either grant or deny the waiver. Individual faculty are not authorized to waive any of the Program requirements without prior approval of the Program Committee. Transfer credit from other institutions can be applied to an advanced degree if "approved by the head of the Program, the grade earned is "B" or above, and it was awarded graduate credit at the institution where the work was completed." (For additional information see the UA Graduate College website, <http://grad.arizona.edu/new-and-current-students>). If waivers are granted for coursework taken at other institutions, these courses are referred to as "Transfer Credit" by the Graduate College, and must be listed as such on the Master's Plan of Study form (in UAccess Student, GradPath, after completing the Transfer Credit form). The Master's Plan of Study must be filed during the third semester.

Required Coursework:

- Cellular and Molecular Physiology (PSIO 503); 6 units. Through examination of fundamental cellular processes, the integrated function of diverse cell types is discussed. Topics include: mechanisms involved in protein expression, intracellular protein targeting, and regulation of protein function; membrane transport phenomena; cell signaling mechanisms-excitability, ion channels, synaptic function; muscle and vascular function.
- Systems Physiology (PSIO 603A); 6 units. This course in human physiology contains an extended discussion of the Nervous System, Cardiovascular, Renal, Respiratory, Endocrine and Gastrointestinal Physiology presented at the systems level but building on cell and molecular physiology and leading to an integrated view of the function of the human organism. The lectures are designed to introduce individual elements and concepts that constitute physiology, and to integrate these basic principles into a picture of the complete system. Weekly discussion sections compliment the lecture series. The discussion sections focus on primary research articles and problem sets that augment lecture topics.
- Research Methods in Physiological Sciences (PS 700), 3 units. Laboratory course providing students with an understanding of the types of research available in the Physiological Sciences GIDP. The purpose of this course will vary with the individual needs and interests of the student. In general, the investigator should not expect the student to complete a major project. Rather, the course provides an opportunity to become acquainted with the ongoing research of the laboratory and to be exposed to the important technical aspects of the work under the tutelage of any regular faculty member with an active appointment in the Physiological Sciences Graduate Program. Laboratory placements with faculty outside of the PS GIDP are not allowed unless petitioned and approved by the Program Committee. As a general rule, the graduate college considers one (1) unit of credit to be equal to three hours of work per week (45 hours/semester/credit). Prior to beginning the course both the student and the faculty member must complete the Research Methods Work Plan form: <http://physiological-sciences.arizona.edu/link-graduate-college-forms>.
- Physiology Student Forum (PS 696C); each semester, 1 unit. This course run by the Physiological Sciences Graduate students must be taken for credit every semester unless there is a class conflict. Student Forum meets for one hour every other week, alternating with Seminar. Master's students must give at least one 20-30 minute presentation during Student Forum, in addition to the Masters final presentation (if applicable). This presentation requirement is completed during the third semester, in Year 2. Mentors will attend their student's forum presentation. Student attendance will be taken at each Student Forum. A minimum of four units of credit derived from Student Forum is required.
- Departmental Seminar (PSIO 696A), each semester, 1 unit. This course must be taken for credit every semester unless there is a class conflict. It meets for one hour every other

week, alternating with Forum. However, credit for attending departmental seminars can be obtained in any department participating in the Physiological Sciences Program. A minimum of four units of credit derived from departmental seminar presentations is required.

- Research (PS/PSIO 900), at least two semesters, each 4 units (8 units total). The second year of the Master's program will be heavily focused on the students' research projects of choice. These units ensure the students receive credit for the hours spent in the lab on research.

Additionally, all Master's students who are awarded a teaching assistantship must also enroll in Physiological Sciences Teaching Workshop (PS 697 A and B) during the fall and spring semesters of the first year.

An individual curriculum plan specifying any other coursework will be developed by the student and his/her advisor and approved by his/her M.S. Committees. A program of study should be developed as soon as possible and submitted on the "Plan of Study" form in GradPath. If the student and mentor decide to alter their original goals, a modified "Plan of Study" should be submitted through GradPath.

Teaching Assistantship

Master's students may compete for Teaching Assistantships to provide teaching experience and funding support. These students must also enroll in additional coursework in their first year:

- Physiological Sciences Teaching Workshop (PS 697A and B); 1 unit/ea. Must be taken in the first year in which the student is a Teaching Assistant.
 - Fall (A): Theoretical background on learning/teaching; Handy hints from good teachers; Development of teaching philosophy and techniques
 - Spring (B): Observations and feedback (peer & faculty); More handy hints; Evolution of own style and skill

Financial Support for Master's Students

There are three primary avenues of financial support for the Masters students: graduate teaching assistantships, research assistantships, and self-support. In some cases, combinations of partial teaching assistantships and partial research assistantships may be arranged. Regardless of the avenue of support, all Masters applicants are held to the same minimum academic requirements for admission into the program. Applicants will be informed about support options early in the recruiting process.

The Physiological Sciences program has no financial commitment for the support of Masters students accepted into the program, and students must indicate that they are aware of this restriction at the time of application. Students may qualify for and receive support from TA-ships administered through the Dept. of Physiology, these are independent of the Physiological Sciences Program. The student's option for support will not be taken into account in the ranking of applicants by the Recruitment and Admissions Committee.

(i) Teaching assistantship.

This option requires the student to TA in order to provide a stipend/salary. Teaching in of itself does not contribute to the MS degree, it funds the route to the degree. Thus all MS students are required to complete a significant research experience and defend a thesis or manuscript for their MS.

Teaching assistantships are administered through the Department of Physiology, and thus the number of students recruited and admitted for these positions will be specified by the Department. Some prior coursework in physiology may be required as a prerequisite for students applying for support under this option, and will be stated explicitly in the TA offer from the Department.

(ii) Research assistantship.

This option is available to students that have identified a faculty sponsor who can support the student as a Research Assistant (at 50% time). The faculty sponsor must sign the student's funding form indicating that this support will be provided if the student is accepted into the laboratory. Guaranteed support will not ensure that the student is accepted into the program, since all applicants will be considered on a competitive basis. Teaching will not be required.

(iii) Other support.

Students must state in this circumstance that they can reasonably expect to have an independent means of support for 2 years, such as a 2 year fellowship, personal income from a job, or other options. The Physiological Sciences Program and the Dept. of Physiology have no financial commitment for the support of Masters students accepted into the program, and students must indicate that they are aware of this restriction at the time of application.

Master's Completion Requirements

Successful completion of the Master's program includes the completion of required coursework, completion of the 20-30 minute Student Forum presentation, completion of a research project culminating in a research paper, successful defense of research, and completion of GradPath forms.

Each Master's student is expected to complete the program in two years, barring exceptional circumstances. If the Master's student has not chosen a faculty mentor by the end of the first semester of study, the PS Program Committee will help assign a faculty mentor to the student in order to facilitate the selection of a laboratory (when appropriate) in which to complete the Master's research project.

Each student will select a formal Master's committee consisting of the major advisor/research project director and two committee members from the faculty of the Physiological Sciences program, by the beginning of the student's second semester in the program. The M.S. student's committee should meet in the second semester to review the curriculum plan, and at least once per semester thereafter to evaluate student progress and advise the student on appropriate options for meeting the requirements for final completion. Penultimate copies of the completed research paper must be distributed to the committee members with enough time to review before the defense, typically two weeks prior.

With approval from the student's committee, the student will choose one of 3 options described below as the final requirement for the M.S.

- **Master's Thesis and Oral Examination:** A traditional thesis is written following the Master's Thesis Formatting Guide, provided by the Graduate College: <https://grad.arizona.edu/gsas/dissertations-theses>. A public oral presentation is required, followed by a defense of the document to the committee.
- **Research Manuscript (written document) and Oral Examination:** A summary of the research project in the form of a "first author" manuscript that may be submitted for publication. A public oral presentation is required, followed by a defense of the document to the committee.
- **Written Scientific Document (review) and Oral Examination:** Demonstrate scientific insight/integrative thinking by writing a critical literature review. A public oral presentation is required, followed by a defense of the review and oral examination by the committee.

Master's Program Timeline

The following is the general time frame in which most students progress through the M.S. Program in Physiological Sciences. A Checklist is provided in Appendix IV to help you keep track.

Year 1

- Submit GradPath forms: Responsible Conduct of Research Statement and Plan of Study.
- Complete Teaching Assistantship.
- Satisfactorily complete PSIO 503 and 603A (grade of "B" or better).
 - Note: "C" is a passing grade for the Graduate College but could bring your GPA below the required 3.0 minimum for satisfactory progress and jeopardize your Teaching Assistantship. Please notify the Program Office immediately if you receive a "C" in either course to discuss your continuation in the program.
- Complete the Research Methods course in the laboratory of your choice and submit Research Methods Work Plan form: <http://physiological-sciences.arizona.edu/link-graduate-college-forms>.
- Choose a faculty mentor and join a lab for the remainder of the program. To formalize your selection, you and your mentor must notify the Program Office by email.

Year 2

- Complete the 20-30 minute Student Forum Presentation in the Fall term.
- Complete GradPath Master's/Specialist Committee Appointment Form in the Fall
- Complete the process of formulating a research project, conducting experiments, and writing about and defending research.

*Progress will be monitored on an annual basis by the Program Committee, the student mentor, and Master's committee. Should these milestones be delayed or missed, a meeting with the Program Coordinator, Program Chair and/or Program Committee Chair will be necessary to discuss a plan to improve progress and the student's future in the Program.

ADDITIONAL POLICIES AND PROCEDURES

Appeals Process

If a student wishes to appeal any of the aforementioned requirements the appeal should be made in writing to the Program Chair. The appeal will be reviewed by the Program Committee and may include a collective meeting with the student. A decision to accept the appeal of the Program Committee will be based on a majority vote. The program faculty may place additional requirements/deadlines on the student as a prerequisite for continuing in the program. Students who wish to appeal the decision of the program faculty must submit an appeal in writing to the Graduate College. Information regarding appeals or grievances is available on the Academic Policies section of the Graduate College website: <http://grad.arizona.edu/policies/academic-policies/summary-grievance-types-and-responsible-parties>.

Incomplete Policy

Students earning a grade of Incomplete, "I" for a course should submit a completed Report of Incomplete Grade form to the Program Coordinator for inclusion in their academic record. <http://registrar.arizona.edu/gradepolicy/incomplete.htm>. Incomplete grades should be completed in a timely manner and are submitted at the discretion of the course Instructor.

Annual Review Process

Master's and Doctoral students are both subject to annual evaluation for satisfactory progress based on overall progress towards the completion of degree requirements. The Physiological Sciences Progress Report forms are distributed by the Program Coordinator and should be returned by the deadline to maintain satisfactory progress in the program.

***Important information regarding Graduate College policies, procedures, professional development, and **family-friendly resources**, can be found on the New and Current Students page of the Graduate College website: <http://grad.arizona.edu/new-and-current-students>

APPENDIX I: PHYSIOLOGICAL SCIENCES PROGRAM BY-LAWS

(Rev. 7/2019)

(Rev. 6/2011)

(Rev. 1/2004)

(Rev 10/1998)

The Physiological Sciences Graduate Interdisciplinary Program (GIDP) is composed of research and graduate educational activities in a broad range of Physiological areas. The program involves faculty members from the Colleges of Medicine, Pharmacy, Agriculture & Life Sciences, Engineering and Science. The Executive Committee (appointed by and responsible to the Chair of Graduate Interdisciplinary Program) serves as the executive, policy and administrative agency for the Program. The structure and organization of the Physiological Sciences GIDP shall conform to the Guidelines for Graduate Interdisciplinary Programs established by the Director of Graduate Interdisciplinary Programs.

It is the responsibility of the Physiological Sciences Program to provide a graduate educational program in the various areas of physiology, to publicize the program, and to maintain graduate participants of the highest quality. It is also the responsibility of the program to maintain vigorous, productive research activities, to maintain an interacting community of physiological scientists by providing seminars and promoting campus-wide interdisciplinary activities, and to identify promising areas of physiological research and the faculty expertise and facilities needed to explore these areas.

Creative planning and leadership are essential to maintain and foster excellence in physiological research. These and related functions are served by the Physiological Sciences GIDP and its Executive Committee. In the following sections the By-laws that govern policies and operating procedures are outlined.

Article I. Chairperson of the Executive Committee and of the Physiological Sciences Graduate Interdisciplinary Program.

Activities of the Physiological Sciences Program are administered by the Executive Committee whose Chairperson shall also serve as Chair of the Physiological Sciences GIDP.

A. Chair of the Physiological Sciences GIDP

1. The Chair of the PSGIDP will be appointed to a five-year term by Faculty Director of Graduate Interdisciplinary Programs from a nominee submitted by the Executive Committee. It is the policy of the Physiological Sciences GIDP that the Chairperson may serve no more than one consecutive term. If the nominee is currently a member of the Executive Committee, the allowable tenure as a member of this committee (ordinarily three years; see below) will be extended to a maximum of eight years.

The Chair nominee will be selected by the Executive Committee in a closed session, with advisory votes to be provided to the Executive Committee by the program faculty and the

students before the decision process. In cases where there is a potential conflict of interest on the part of an Executive Committee member, including being the spouse of a candidate or a graduate student in the laboratory of a candidate, that member will be excused from the decision process. Any member of the Executive Committee who is excused from participating in the selection due to potential conflicts of interest will be replaced by another representative. The replacement is temporary and sustained only for the immediate process of discussion and selection of the next Chair nominee. The absent member will be replaced by another member of the Physiological Sciences Program, according to the following hierarchical order. If the person qualified to be appointed as a substitute has a conflict of interest, or is currently appointed to the Executive Committee, then the replacement will be determined by the next option in the series.

For faculty substitutes:

- a). The former Chair of the same Committee in the Physiological Sciences program.
- b). The senior faculty member of the same current Committee, with seniority determined from combined years of service in that position and on other Committees of the Physiological Sciences program.

For student representative substitutes:

- a). The former student representative to the Executive Committee.
- b). The senior student representative from all the current Committees, with seniority determined from combined years of service in that position and on other Committees of the Physiological Sciences program.

2. The duties of the Chair of the Program are: a) call and preside at meetings of the Executive Committee as needed but not less than once a year; b) call and preside at meetings of the Physiological Sciences GIDP at least once per year or as needed; c) appoint and supervise the Standing Committees on Recruiting and Admissions, Program, Teaching, and Activities as detailed in Article II; d) administer the budget of the Physiological Sciences GIDP; e) manage administrative matters (such as qualifying and thesis committees) with the Graduate College f) direct course change and approval forms g) serve on GIDPAC or appoint replacement PSGIDP faculty representative from the Executive Committee.

B. Executive Committee

1. The Executive Committee will consist of six faculty members representing the major areas of Physiological Sciences and one graduate student. Four of the faculty members will represent the standing committees (ordinarily the Chair of the standing committee; see below) and a fifth will serve as the "member at large". Faculty members of the Executive Committee will be appointed only from the members of the Physiological Sciences GIDP. Each Executive Committee member will serve three to five year terms. New members of the Executive Committee will be appointed each year by the Chair of the Program from nominations submitted by the Executive Committee. The graduate

student member will be elected annually by the students (from those students in good academic standing in the Program).

2. The Executive Committee is responsible for administering the Physiological Sciences GIDP, including admission of graduate students, evaluation of continuing graduate students, publicizing the Physiological Sciences program intra- and extramurally, planning the development of the Physiological Sciences Program, formulating the annual budget of the Physiological Sciences GIDP, securing and allocating necessary funding, and advising the Dean of the Graduate College and Provost on issues pertinent to Physiological Sciences.

Article II. Standing Committees

A. The **Recruiting and Admissions Committee** shall be appointed annually by the Executive Committee on Physiological Sciences and shall consist of at least three faculty members and two graduate students who represent the various disciplines within the Committee. At least one member of the Recruiting and Admissions Committee shall be from the Executive Committee. The graduate student members will be elected annually by the students in good academic standing in the Program. The Recruiting and Admissions Committee shall be responsible for publicizing the program, developing an active minority recruitment plan, evaluating applicants, and recommending admission of qualified candidates to the Executive Committee. At its discretion, the Recruiting and Admissions Committee may ask MS students to assist in its work.

B. The Program Committee shall be appointed annually by the Executive Committee on Physiological Sciences and shall consist of at least three faculty members and one graduate student who represent the various disciplines within the group. The graduate student member will be elected annually by the students in good academic standing in the Program. At least one member of the Program Committee shall be from the Executive Committee. The Program Committee shall be responsible for curriculum and course development, maintaining the Student Handbook, suggesting potential advisors to students, evaluation of graduate student progress including an annual evaluation of the yearly progress reports from the students and their mentors, mediation of the concerns and grievances of the graduate student. The Program Committee shall prepare a report on graduate student progress and submit the report by June 1 of each year to the Executive Committee.

C. The **Activities Committee** shall be appointed annually by the Executive Committee on Physiological Sciences and shall consist of at least three faculty members, two trainees who represent the various disciplines within the group. The trainee members will be elected annually by the students in good academic standing in the Program. At least one member of the Activities Committee shall be from the Executive Committee. The Activities Committee shall be responsible for organizing educational and social events that promote interactions among the members of the Physiological Sciences Program. These activities shall include at least one picnic at the beginning of each academic year, supervision of Student Forum, at least one annual poster session, and an Activities listserv.

D. The **Teaching Committee** shall be appointed annually by the Executive Committee on Physiological Sciences and shall consist of at least two faculty members and one graduate student, who represent the various disciplines within Physiological Sciences GIDP. The graduate student member will be elected annually by the students and must be in good academic standing in the Program. At least one member of the Teaching Committee shall be from the Executive Committee, and the Chair of the Teaching Committee will be a faculty member in the Department of Physiology. The Teaching Committee will be responsible for working with the Department of Physiology to assign teaching responsibilities to all graduate students, taking into account preferences of course coordinators and students. Assignments shall be distributed among students in as equitable manner as possible, individual teaching loads being averaged over the year. The Teaching Committee shall also be responsible for ensuring that all students receive an evaluation of their teaching abilities both from the students that they teach and from a faculty member

Article III. Membership in the Physiological Sciences GIDP

The Physiological Sciences GIDP consists of tenured (or tenure-eligible) faculty members at the University of Arizona who participate in graduate education and research in Physiological Sciences. An affiliate membership is available to non-tenure-eligible faculty.

A. Regular Membership

1. Criteria

- a. Faculty (tenure-eligible only) shall be nominated for membership in the Physiological Sciences GIDP by submitting a request for membership and a recent curriculum vitae to the Executive Committee. A two-thirds majority of positive votes of the Executive Committee shall be required for nomination to membership to the Director of Graduate Interdisciplinary Programs, who shall confer membership. Criteria for membership shall include demonstrated research activity, interest in graduate education, and resources for graduate training.
- b. A member of the Physiological Sciences GIDP shall be dropped from membership for failure to participate in the activities of the Program. Participation includes service as a thesis/dissertation director for graduate students in Physiological Sciences, service on a committee of the Physiological Sciences GIDP, teaching a graduate course in Physiological Sciences, giving a seminar in the Physiological Sciences seminar, continued scholarly and research productivity in Physiological Sciences. Membership shall be subject to periodic review and failure to satisfy those criteria as decided by a two-thirds majority of the Executive Committee shall result in loss of membership.

2. Responsibilities

- a. Members of the Physiological Sciences GIDP may serve as academic and research advisors of graduate students in the program and as members of graduate and other committees.
- b. Members of the Physiological Sciences GIDP shall meet annually or as needed. Meetings shall be conducted in accordance with Robert's Rules of Order.
- c. Each member of the Physiological Sciences GIDP shall have one vote on matters brought to the Program by the Executive Committee, a quorum shall constitute one-third of membership. Failing a quorum, electronic voting shall be required and one-third response shall be a quorum.
- d. Members shall be listed as Faculty of the Physiological Sciences GIDP in the Graduate Catalog.

B. Affiliate Membership

1. Non-tenure-eligible faculty who otherwise meet the criteria for membership (Art. III, 1.a.), may apply for affiliate membership in the Physiological Sciences GIDP by submitting a request for membership and a recent curriculum vitae to the Executive Committee, a two-thirds majority of positive votes of the Executive Committee shall be required for election to affiliate membership.
2. Affiliate members shall have all the privileges and responsibilities of regular members (Art. III, 1.b.) except that they can only serve as co-directors of graduate dissertation committees in conjunction with a regular member.

Article IV. Amendments

The By-laws shall be amended or revised by movement of the Executive Committee and a two-thirds positive vote of the Physiological Sciences GIDP.

APPENDIX II: THE COMPREHENSIVE EXAMINATION COMMITTEE CHAIR CHECKLIST

The following is a checklist for the Chair of the Comprehensive Examination Committee (NOT the mentor). For further details, refer to the Physiological Sciences Program Handbook. Questions may be directed to the Program Coordinator or the Program Chair.

Doctoral students must select a Comprehensive Examination Committee during their 3rd semester in the Program. The student will select one member (not the advisor) to chair the committee. The chair is responsible for chairing meetings of the Exam Committee and for managing the development and execution of the exam. The Comprehensive Examination Committee Chair and the Program Committee Chair will include the Program Office on all communication regarding each students' comprehensive exams.

___ Determine the date for the written exam, and if possible, potential dates for the oral exam (if the written is successfully passed).

___ Determine the areas on which the student will be examined, and which committee member is responsible for composing each question (3 systems, 3 cell/molecular).

___ Set a date by which the questions will be submitted to the chair (see below).

___ The questions must be submitted to the Chair of the Program Committee at least 1 week prior to the exam date, so that the PS Program Committee can evaluate it for consistency with program goals, and suggest changes when warranted.

___ Send final version of the written exam to the Program Coordinator to distribute and collect (unless instructed otherwise).

___ Distribute the questions to the appropriate committee members for grading, and the graded questions are returned to the Committee Chair. **Insure that exams are graded in a timely manner (5 days).**

___ Once the exams are graded the Committee Chair collects the grades and any comments, notifies the committee, the Program Coordinator, and the student of the results. The Committee Chair provides a copy of the graded exams to the Program Office to be filed.

If the result is "pass", the student proceeds with the Oral Exam. If the result is "fail", the Chair of the Committee follows the guidelines for repeating the written exam – by calling another Committee Meeting to determine procedure.

___ After the Oral Examination the Chair reports the results in GradPath.

APPENDIX III: THE WRITTEN COMPREHENSIVE EXAM APPROVAL FORM

Physiological Sciences
Written Comprehensive Exam Approval Form *electronic form coming soon

Student Name: _____ Date of Written Exam: _____

Committee Members (Please print name after signature)

Comp Committee Chair: _____

Faculty (Major) _____

Faculty (Major) _____

Faculty (Minor) _____

Faculty (Minor) _____

Results of the Written Comprehensive Exam

	Pass	Fail
Systems Physiology:		
Question 1:	_____	_____
Question 2:	_____	_____
Cell & Molecular Physiology:		
Question 1:	_____	_____
Question 2:	_____	_____

- *Failure of one question or section results in one re-take of that section.
- *Failure of two questions or both sections results in one re-take of the entire exam.
- *Failure of a re-take results in dismissal from the Program, per the student handbook.

Successful Completion/Approval of Defense, signed by Mentor:

Signature: _____ Date: _____

Please submit this form to the Program Coordinator after confirming the grade for the Written Comprehensive Exam.

APPENDIX IV: PHYSIOLOGICAL SCIENCES DOCTORAL STUDENT CHECKLIST

Name: _____ First Enrollment: _____ Mentor: _____

Program Forms:

Research Methods Work Plan Forms (Faculty/Term) _____

Mentor Selection Form ____/____/____

Dissertation Proposal Form: ____/____/____

Teaching Fulfilled _____ Transfer Units Approved (if applicable)? _____

Student Forum (Term): Full Length Seminar: ____ 20 Minute Presentations: _____

Required Coursework: (Term/Grade)

PSIO 503 _____ PSIO 603 _____ Ethics (course #) _____ Stats (course #) _____

PS 697 A _____

18 Dissertation units completed: ____/____/____

Graduate College GradPath Forms:

Responsible Conduct of Research ____/____/____ Doctoral Plan of Study: ____/____/____

Comp Exam Committee Appointment ____/____/____ Announcement of Comprehensive

Exam ____/____/____ Dissertation Committee Appointment ____/____/____

Prospectus/Proposal Confirmation ____/____/____ Announcement of Final Oral Defense:

____/____/____

List the Comprehensive Exam Committee: Faculty Name/Dept., Major and Minor

Comprehensive Committee Meetings: ____/____/____, ____/____/____, ____/____/____

Written Completion Date: ____/____/____ Oral Completion Date: ____/____/____

List the Dissertation Committee: Faculty Name/Dept., Major and Minor

Dissertation Committee Meetings: ____/____/____, ____/____/____, ____/____/____

Dissertation Title:

APPENDIX V: PHYSIOLOGICAL SCIENCES MASTER'S STUDENT CHECKLIST

Name: _____ First Enrollment: _____ Mentor: _____
Faculty Preceptor: _____ Student Preceptor: _____

Program Forms:

Research Methods Work Plan Form (Faculty/Term) _____

Mentor Selection emailed to Program Office ___/___/___

Student Forum (Term): 20 Minute Presentation: _____

Required Coursework: (Term/Grade)

PSIO 503 _____ PSIO 603 _____ PS 697 A and B _____

Transfer Units Approved (if applicable)? _____

Graduate College GradPath Forms:

Responsible Conduct of Research ___/___/___ Master's Plan of Study: ___/___/___

Master's Committee Appointment Form: ___/___/___

Committee:

Committee Meetings: ___/___/___, ___/___/___, ___/___/___,

Graduation Option (check one):

- Masters Thesis, and oral presentation
- Research Project Summary (written document) and oral presentation
- Written scientific document (review) and oral examination

Project or Thesis Title

APPENDIX VI: GRADPATH INSTRUCTIONS

GradPath is the electronic system utilized by the University of Arizona to track students' process through their Programs, to keep record of student documentation, and to ensure students meet Graduate College Policy.

Ph.D. GradPath Instructions

Doctoral students initiate the completion of GradPath forms during their third semester in the Program. The following is a list of when each form needs to be completed:

- Year 1, Fall Term:
 - Responsible Conduct of Research Statement
- Year 2, Fall Term:
 - Plan of Study
- Year 2, Spring Term:
 - Comprehensive Examination Committee form.
 - Announcement of Doctoral Comprehensive Exam form. (May be submitted during the Summer term, following the fourth semester.)
- Year 4, Fall Term:
 - Doctoral Dissertation Committee Appointment
- Year 4, Spring Term:
 - Prospectus/Proposal Confirmation.
- Year 5, Spring Term:
 - Announcement of Final Oral Defense

GradPath forms are submitted electronically through UAccess Student Center. For assistance with submitting these forms see <https://grad.arizona.edu/gsas/gradpath/faq?audience=35>. Any questions may be directed to the Program Office or the Graduate College Degree Counselor.

- Login to UAccess Student Center
- Click the menu box showing "other academic" and select "GradPath Forms" near the bottom of the list.
- Click the ">>" button to go to the GradPath page.
- You must first complete the "Responsible Conduct of Research Statement" form. Check the "I Accept" item and then click "Submit."
- The Plan of Study Form should now be available. You will need at least 36 units for the Major and at least 9 units for the Minor. To add the courses you have already taken, click the "Get Enrollment" button. To add classes you will take in the future, click the "Get Future Courses" button. In this section, you will want to enter "1" for the number of registrations, and the number of units (1 for a class like PSIO 696, or 4 for a class like PS 900 for research). Dissertation units cannot be included on this form. Once you submit the form, it will go to the Program Coordinator, then your Minor advisor and Minor Director of Graduate Studies, then to your Mentor and our Program Chair, and finally to the Graduate College for approval. If there are any mistakes the form will be "denied" so that changes can be made. You would then "modify" the form to make the necessary changes and resubmit it.

- Once the Plan of Study has been approved, you may submit the Comprehensive Examination Committee form. Select each member from the UAccess database. You must also assign each member a role. Remember that the chair of your Comprehensive Examination Committee cannot be your mentor and must be a different faculty member. Other faculty should be given the role of “member” unless they are a Special Member. Select Special Member for faculty that are either not tenure-track or are not an employee of the University of Arizona. Be sure to communicate with the Program Office to make sure the Special Member is approved by the Graduate College. Contact the Program Office if a member of your committee is not found in the UAccess database.
- Once you have passed your Written Comprehensive Examination and have determined a date, time, and location for your Oral Comprehensive Examination, you may submit the Announcement of Doctoral Comprehensive Exam form. Be sure to submit this form prior to your oral exam. The chair of your Comprehensive Examination Committee will complete the Results of Comprehensive Exam to report your exam results.
- During the Fall term of your 4th Year, submit the Doctoral Dissertation Committee Appointment. The directions for this form are the same as for the Comprehensive Exam Committee form, except your mentor is now the chair of your committee. Your Dissertation Committee may be different from your Comprehensive Examination Committee. See each section in the Doctoral Program section of this handbook for more details on the committees, if needed.
- During the Spring term of your 4th Year, gain approval of your Dissertation Proposal from your committee and complete the Dissertation Proposal Form found on our website under the Current Students Section: Program Forms. Submit a copy of your Proposal and the completed Dissertation Proposal Form to the Program Office. The Program Coordinator will then complete the Prospectus/Proposal Form in GradPath.
- When you are ready to defend your dissertation, and have determined the date, time, and location of your defense, complete the Announcement of Final Oral Defense GradPath form. This form must be submitted at least 10 days prior to your defense, as it must be announced on the public University Master Calendar. Your Mentor will submit the results of your defense by completing the Results of Final Oral Defense form in GradPath.

Master's GradPath Instructions

Master's students complete all of their GradPath forms during their third semester in the Program. GradPath forms are submitted electronically through UAccess Student Center. For assistance with submitting these forms see <https://grad.arizona.edu/gsas/gradpath/faq?audience=35>. Any questions may be directed to the Program Office or the Graduate College Degree Counselor.

- Login to UAccess Student Center
- Click the menu box showing "other academic" and select "GradPath Forms" near the bottom of the list.
- Click the ">>" button to go to the GradPath page.
- You must first complete the "Responsible Conduct of Research Statement" form. Check the "I Accept" item and then click "Submit."
- The Plan of Study Form should now be available. Click "Yes" only if you chose the Thesis Option for your research project – click "N" if you are completing a Research Manuscript or Scientific Paper. You will need at least 30 units. To add the courses you have already taken, click the "Get Enrollment" button. To add classes you will take in the future, click the "Get Future Courses" button. In this section, you will want to enter "1" for the number of registrations, and the number of units (1 for a class like PSIO 696, or 4 for a class like PS 900 for research). Make sure you add at least 1 unit of PS 910 if you are completing the Thesis Option, but *do not add PS 910* if you are not completing a formal thesis. Once you submit the form, it will go to the Program Coordinator, then to your Mentor, then to our Program Chair, and finally to the Graduate College for approval. If there are any mistakes the form will be "denied" so that changes can be made. You would then "modify" the form to make the necessary changes and resubmit it.
- Once the Plan of Study has been approved, you may submit the Master's/Specialist Committee Appointment Form. Select each member from the UAccess database. You must also assign each member a role – your Mentor will be the Chair and the other faculty will be Members. Select Special Member for faculty that are either not tenure-track or are not an employee of the University of Arizona. Be sure to communicate with the Program Office to make sure the Special Member is approved by the Graduate College. Contact the Program Office if a member of your committee is not found in the UAccess database.
- Bring the Master's Defense Committee Form, found on our website under the Current Student section, Program Forms, (<http://physiological-sciences.arizona.edu/link-graduate-college-forms>) to your defense. You will need your Committee Chair to sign the bottom of the form to indicate that you passed your defense. Submit that form to the Program Office so that the Program Coordinator may submit the Master's/Specialist Completion Confirmation from in GradPath, indicating that you have met our Program's requirements for graduation.