

PH.D. IN APPLIED PHYSIOLOGY
WITHIN THE DEPARTMENT OF KINESIOLOGY AND APPLIED PHYSIOLOGY

Program Policy Statement

Part I. Program History

A. Mission Statement

The mission of the PhD program is to provide advanced training to students in the field of **Applied Physiology** with the goal of preparing students for research-based careers. Areas of in-depth study are driven by faculty research and encompass cardiovascular physiology, exercise physiology, musculoskeletal physiology, and neurophysiology. The programmatic emphasis is on the regulation, adaptation, and integration of mechanisms across all levels of biological organization from molecules to organ systems. New knowledge on health, aging, chronic disease, and injury prevention will be generated and disseminated. Along with in-depth, laboratory-based immersion, the mission of the program is to provide high quality classroom-based instruction through a core graduate curriculum, electives, and seminars.

B. Date of Permanent Status

The Applied Physiology PhD program was approved by the Faculty senate on February 7, 2011 and received permanent status in Spring of 2018.

C. Degrees Offered

The degree awarded to those who complete this program is a Doctor of Philosophy (Ph.D.) in Applied Physiology.

Part II. Admission

A. Admission Requirements

Admission to the graduate program is competitive. Those who meet stated requirements are not guaranteed admission, nor are those who fail to meet all of those requirements necessarily precluded from admission if they offer appropriate strengths.

Specific admission requirement are as follows:

1. A completed University of Delaware Graduate Studies application.
2. A Bachelor of Science, Master of Science or equivalent degree from an accredited college or university. A minimum undergraduate GPA of 3.0 on a 4.0 system is required.
3. A combined quantitative and verbal GRE score of at least 300 is required.
4. International student applicants must demonstrate a satisfactory level of proficiency in the English language if English is not the first language. An official paper-based TOEFL score of at least 550, or at least 79 on the Internet-based TOEFL with a minimum speaking score of 18 is necessary for an applicant to be considered for admission.

5. Applicants must submit an essay to specific questions asked on the application; a resume; and a statement of professional goals and objectives.
6. Applicants must submit at least three letters of recommendation. All letters of recommendation should be managed electronically through the Graduate College.
7. One official transcript of all US colleges and universities attended must be sent directly from the institution to the Graduate College or be provided in a sealed envelope with the application packet. Students who have attended the University of Delaware need not supply a transcript from Delaware.
8. One official transcript of all non-US based college and university records is required. The transcript must list all classes taken and grades earned. If the transcript does not state that the degree has been awarded, send a degree certificate that states that the degree has been awarded. If the degree has not been awarded or the degree certificate has not been issued, evidence of the awarded degree must be provided prior to the first day of classes in the term of admission. For institutions that issue documents only in English, send the English original. For institutions that issue documents both in English and a foreign language, send both the English language original and the foreign language original. For institutions that issue documents only in a foreign language, send the foreign language original and a certified translation in English. The translation must be certified by an official of the issuing institution, a state- or court-appointed translator, or the Embassy of the issuing country in the United States. If it is necessary to send non-original documents:
 - a. The documents must be original “attested copies”, officially attested to by the issuing institution or the Embassy of the using country in the United States, and
 - b. Certified translations must be originals, no copies will be accepted.

B. Application Deadlines

A completed application should be submitted no later than February 1 for the fall semester, and October 1 for the spring semester to ensure consideration.

C. Admission Categories

Students admitted to the Applied Physiology Program may be admitted into one of two categories:

1. Regular status is offered to students who meet all of the established entrance requirements, who have a record of high scholarship in their fields of specialization, and who have the ability, interest, and maturity necessary for successful study at the graduate level in a degree program.
2. Provisional status is offered to students who are seeking admission to the degree program but lack one or more of the specified prerequisites. All provisional requirements must be met within the deadline given before regular status can be granted. Students admitted with provisional status are generally not eligible for assistantships or fellowships. Students who file an application during the final year of undergraduate or current graduate work and are unable to supply complete official transcripts showing the conferral of the degree will be admitted pending conferral of the degree if their records are otherwise satisfactory and complete.

Part III. Degree Requirements for the Doctor of Philosophy in Applied Physiology

The degree requirements are the same, whether a student is entering the program with a bachelor's degree or a master's degree.

A. Course Requirements

The Doctor of Philosophy in Applied Physiology requires a minimum of 46 credits including 9 credits (KAAP969) of dissertation. The program is designed to be completed in 4 years. The 46 required credits are specified in the student's plan of study and normally include:

Required courses (22 credits):

- KAAP630 Advanced Human Physiology I (3)
- KAAP631 Advanced Human Physiology II (3)
- Research (KAAP868/964) (12)
- Statistics* (6)
- Seminar (KAAP801) (4)

(Seminar taken 8 semesters, 4 semesters for credit and 4 semesters as listener.)

*This statistics requirement can met by the following courses:

BISC 643: Biological data analysis

EDUC665: Elementary Statistics

EDUC812: Regression and Structural Equation Modeling

STAT608: Statistical research methods

STAT656: Biostatistics

Additional statistical courses may be considered and substituted with approval by the advisor and Program Director.

Elective Courses (9 credits): Suggested courses are listed in Appendix A.

Students who have had substantially similar courses to one or more of those required prior to entering the Applied Physiology Program may substitute other appropriate courses with the approval of the advisor and the Program Committee.

Only those courses in the 600, 800, 900 levels will apply towards the doctoral degree. Independent study courses will be accepted based on approval of the advisor and the Department Chair. A maximum of 9 independent study credits may be included in the program of study.

B. Planned Program of Study and Revisions

Students are required to develop a plan for a program of study with their advisor during the first semester of study. Depending on the student's background and interests, the program of study may include courses beyond the minimum number required for the degree. The planned program of study must first be approved by the advisor and then the Program Committee by the end of the first semester. A typical plan for the program of study (**showing only the minimum requirements for the degree**) is shown below.

Fall - Year I

KAAP630	(3)
Research I	(3)
Statistics	(3)
Seminar	(1)

Spring – Year I

KAAP631	(3)
Research II	(3)
Statistics	(3)
Seminar	(1)

Preliminary Exam at end of year 1**Fall – Year 2**

Elective	(3)
Research III	(3)
Seminar	(1)

Spring – Year 2

Elective	(3)
Research IV	(3)
Seminar	(1)

Fall – Year 3

Seminar	(0)
Elective	(3)

Spring – Year 3

Seminar	(0)
Dissertation	(3)

Fall – Year 4

Seminar	(0)
Dissertation	(3)

Spring – Year 4

Seminar	(0)
Dissertation	(3)

Students may need to alter their approved program of study due to scheduling conflicts, creation of new courses, or change of research focus. Students who wish to make changes to their program of study should first obtain permission from their advisor. The revised program of study must be approved by the Program Committee.

Students must have a minimum overall cumulative grade point average of 3.0 to be eligible for the degree. Grades in all courses required for the degree must be a minimum of B-. All graduate numbered courses taken with graduate student classification at the University of Delaware are applied to the cumulative index. Credit hours and courses for which the grade is below “C” do not count toward the degree even though the grade is applied to the overall index. Candidates should ensure that all grades have been submitted by their professors. Temporary grades of “S” (Satisfactory) are assigned for Research and Dissertation until a final letter grade is submitted upon completion of the dissertation. Any student receiving a grade of “U” (Unsatisfactory) for Research or Dissertation will be given written conditions which must be met for improving and continuing in the program by the student’s advisor and the Program Committee. Failure to meet these conditions will result in recommendation for dismissal from the program.

C. Residency Requirement

At least 4 academic years of graduate work are required for the PhD degree. At least one continuous academic year must be devoted exclusively to full-time study (9 credit hours per semester) in applied physiology in residence at the University of Delaware. This residency requirement may be fulfilled using a fall and spring semester combination or a spring and fall semester combination, but summer and winter sessions do not meet the qualifications. Course credit earned in the master’s program in Exercise Science at

the University of Delaware may be applied toward the doctoral degree residency requirement.

D. Faculty Advisors and Committees for Preliminary Exams and Dissertation.

- a. **Faculty Advisors.** During the application process, each student must identify a faculty advisor from among the faculty holding appointments in the program. The faculty member must be willing to serve as advisor and to accept responsibility for oversight of the student's academic progress in the program.

If, during the course of a student's academic program, the advisor is unable or unwilling to continue as advisor, it is the student's responsibility to identify a faculty member willing to be the new advisor. The new advisor must be identified within 6 months in order for the student to be considered making satisfactory progress toward the degree.

Students may also elect to switch to a different advisor at any time with the approval of the Program Committee and with the consent of the new faculty advisor. Switching advisors does not change the deadlines for completing the requirements for a degree.

- b. **Preliminary Exam Committee.** The Program Committee will identify, each year, at least three faculty members and the Program Director who will have responsibility for writing and assessing the written and oral components of the preliminary exams for those students ready to take this exam. All members of the Applied Physiology faculty are encouraged to participate in the oral portion of the exam. However, responsibility for determining the final outcome of the exam (pass, re-examination, failure) will lie with the named members of the Preliminary Exam Committee. In the event of a re-examination, the same committee members will have responsibility for composing the exam and assessing the outcome.
- c. **Dissertation Committee.** The student and his/her advisor will identify members of a Dissertation Committee within one semester of successful completion of the preliminary examination. Ph.D. dissertation committees must consist of a minimum of four members and a maximum of seven members, including the advisor. At least three of the members should be University faculty with appointments within the Applied Physiology Program. At least one member is to be selected from outside of the Applied Physiology Program and/or from outside of the University. These outside committee members should be chosen based on their expertise in the area of study related to the dissertation, and in consultation with the advisor and other committee members. Outside committee members will normally hold a doctoral degree. An outside committee member not holding a doctoral degree must be approved by the Program Committee. It is the responsibility of the advisor to replace members who withdraw from the committee during the dissertation process.

Students must convene their dissertation committees at least once every six months. Upon completion of the meeting, the student's advisor must complete a meeting report and submit it to the graduate coordinator. The deadlines for

submission of these meeting reports are October 1 and March 1 of each year. Students who do not have committee meetings in a timely manner will be considered as failing to progress and will be required to meet with the Program Committee to determine whether a recommendation for dismissal from the program is warranted.

d. **Laboratory Safety and Research Regulations and Standards of Student Conduct.**

Graduate students performing laboratory research are subject to all University regulations regarding safety, human subjects, animal use, and hazardous and radioactive material use and disposal. These guidelines may be found in the University of Delaware Policies and Procedures Manual. Additional information can be obtained from the UD Research Office website: <http://www.udel.edu/research/>

All training and regulatory authorizations must be updated at the time of proposal submission.

E. Preliminary Examination Requirement

Students must pass a preliminary examination that tests their general knowledge base in applied physiology and their ability to critically evaluate scientific literature. The preliminary examination is an oral exam and content of the exam is usually based on: 1) two semester course in Advanced Human Physiology taken during the student's first year of the academic program and 2) an area of study that is consistent with the student's planned dissertation work. The preliminary examination must be completed by the end of the student's first year of enrollment. The results of this examination will be one of the following:

1. **Pass.** The student may proceed to the next stage of his/her degree training.
2. **Conditional pass.** In the event that the examination committee feels the student's performance was generally acceptable but with a specific deficiency, condition(s) will be specified that the student must satisfy to achieve a Pass and remain in the Program. These conditions may include a re-examination on one or more question areas in either oral or written form.
3. **Re-examination.** This result is appropriate for a student whose performance was unsatisfactory, but displayed evidence of the potential to complete graduate degree training. Re-examination must be completed within one semester. The possible outcomes of the re-examination are pass or failure. The student may not take the exam a third time.
4. **Failure.** This outcome would indicate that examination committee considers the student incapable of completing degree training and the student would be recommended for dismissal from the program.

The advisor and Preliminary Examination Committee will determine on a case by case basis the composition of re-examinations.

F. Dissertation Proposal Defense and Dissertation Defense Requirements

Students in the Applied Physiology Program normally should complete an oral dissertation proposal defense by the end of their sixth semester of enrollment. Prior to the presentation, proposals normally should have received approval from the university Human Subjects Review Board (HSRB) and/or the Institutional Animal Care and Use Committee (IACUC). Similarly, following completion of the dissertation, an oral defense of the dissertation is required.

Procedures for the dissertation proposal defense and the dissertation defense are the same. The written dissertation proposal and the written dissertation will be made available to all members of the Applied Physiology faculty at least two weeks prior to the oral defense dates. The oral defense meetings will include both a defense of the student's proposed or completed dissertation research and an in-depth examination of the student's knowledge of their research specialization. Students are expected to demonstrate competency in both oral and written communication skills. All members of the Applied Physiology faculty will be invited to attend the oral defense meetings.

Following the oral presentation and questions from faculty in attendance the Dissertation Committee will meet separately and vote on the outcome. The possible outcomes of the oral defense are pass, conditional pass, or failure. The outcome will be presented to the student, along with any conditions or requirements for proposal or dissertation revisions. For conditional pass, requirements must be addressed within six months of the original exam date.

Once the proposal defense has been successfully completed, the student must apply to the graduate school for admission into candidacy. Please see the Recommendation for Candidacy for Doctoral Degree form (PDF) for details.

G. Requirements for Satisfactory Progress towards the Degree (up to date information is available on the Graduate College page (<https://grad.udel.edu/policies/graduate-academic-policies/>))

- a. **Time Limit for Completing the Degree.** The time limit for completion of degree requirements begins with the date of matriculation and is specifically detailed in the student's letter of admission. Students entering a doctoral program with a master's degree are given 10 consecutive semesters to complete the requirements. Students who change their degree plan and have transferred from one degree program to another degree program are given 10 consecutive semesters from the beginning of the first year in the latest program. Students entering a doctoral program with a bachelor's degree are given 14 consecutive semesters to complete the degree requirements.

An extension of time limit may be granted for circumstances beyond the student's control. Requests for time extensions must be made in writing and approved by the student's dissertation committee and the director of the Applied Physiology Program. The director will forward the request to the Graduate College.

- b. **Submission of Required University Forms.** When a student has met the requirements for admission to candidacy as previously explained, the department should submit a Recommendation for Candidacy for Doctoral Degree form to the Graduate College. The student's classification will change to postcandidacy upon admission to candidacy status. The deadline for admission to candidacy for the fall semester is August 31. The deadline for admission to candidacy for the spring semester is January 31. The deadline for admission to candidacy for the summer is

April 30. Responsibility for seeing that admission to candidacy is secured at the proper time rests with the student.

To initiate the process for degree conferral, candidates must submit an "Application for Advanced Degree" to the Graduate College. The application deadlines are February 15 for Spring candidates, January 15 for Winter candidates, May 15 for Summer candidates, and September 15 for Fall candidates. The application must be signed by the candidate's adviser and department chair. There is an application fee. Payment is required when the application is submitted. Upon completion of the audit, the Graduate College notifies students in writing when they have met all degree requirements.

- c. **Grade Requirements for Satisfactory Progress.** Failure to satisfactorily progress in the program will be based on the University Graduate Policy as noted below:
The Graduate College monitors the academic progress of all graduate students and notifies students in writing of all academic deficiencies. The cumulative GPA after each 9-hour increment determines academic standing.

The University's Academic Probation Policy is expressed in the following chart:

If student is on:	And earns a GPA of:	The status becomes:
Any status	3.0 or above	Clear
Clear	2.99 – 2.5	Warning
Clear	2.49 – 2.0	Probation
Probation	Below 3.0	Dismissal
Warning	Below 3.0	Probation
Any status	Below 2.0	Dismissal

- d. **Reasons for Dismissal from the Program.** The Graduate College notifies students when they are dismissed from graduate programs without completing a degree. Dismissals usually take place at the end of a term. Students may be dismissed for the following reasons:
- Upon the expiration of the five-year time limit for those students in a doctoral program who were admitted with a master's degree. Upon the expiration of the seven-year time limit for doctoral students who were admitted with a bachelor's degree.
 - Upon the failure to meet the grade point average requirements as stated in the policy on Academic Deficiency and Probation.
 - Upon written notice to the Graduate College of voluntary withdrawal from the program.
 - Upon failure to pass the preliminary, language, or comprehensive/ candidacy examination(s), a dissertation/ proposal defense, or a dissertation defense.
 - Upon the failure to achieve a cumulative grade point average of 3.0 upon the completion of the stated number of required credits for a degree.

- Upon the failure to meet the stated minima in specific course requirements as identified by individual programs when a department has a policy that such failure leads to dismissal from the program.
- Upon failure to satisfactorily conduct research required for the degree.
- Upon the determination by the faculty of the student's department that the student has failed to meet or has failed to make satisfactory progress towards meeting academic standards required of the student's program other than the failure to achieve a cumulative grade point average of 3.0 upon the completion of the stated number of required credits for a degree.
- Upon violation of University of Delaware regulations regarding academic honesty. All graduate students are subject to University of Delaware regulations regarding [academic honesty](#). Violations of these regulations or other forms of gross misconduct may result in immediate dismissal from the Program.

In the case of dismissal, the graduate coordinator is required to send a report to the Graduate College that states the faculty vote on the decision causing dismissal and the justification for this action. The Graduate College will notify a student in writing when the student is being dismissed for failure to make satisfactory progress in the program.

- e. **Procedures for Student Appeals.** Students who receive what they perceive as an unfair evaluation by a faculty member or faculty committee may file [grievances](#) in accordance with University of Delaware policies. Students are encouraged to contact the faculty advisor and then the department chair prior to filing a formal grievance in an effort to resolve the situation informally.

In the case of academic dismissal, the student may appeal the termination by writing to the Graduate College. This appeal must be made within ten class days from the date on which the student has been notified of academic dismissal. If the Vice Provost for Academic Affairs grants reinstatement, the student must meet the conditions of the reinstatement. Failure to meet these conditions will result in dismissal from the program. A graduate student may be reinstated only once to a given major. The student's academic transcript will reflect the reinstatement with academic probation status.

Students wishing to review their program file must submit a written request to the graduate coordinator at least 24 hours in advance. Students must review the file in the presence of program staff or faculty and are not permitted to remove a file but may photocopy documents from their folder. All access to student records is in accordance with the Family Educational Rights and Privacy Act.

Part IV. Assessment Plan

The objective of the PhD program in Applied Physiology is to prepare students for research-based careers. This requires:

- A strong foundation in physiology
- A strong foundation in laboratory skills
- Effective oral and written communication skills

- Critical thinking skills
- Organizational skills

These learning objectives are critical for success of the student in the PhD. They are measured directly by the two course sequence taken during year one which focuses on the physiological systems. While this knowledge is tested in the course, integration of that knowledge across the physiological systems is tested during an oral preliminary exam. Laboratory skills are evaluated by 12 credits of research taken across 4 semesters in the first two years of the program. Effective and oral communication skills are further developed during the 8 semesters of seminar that focuses on these different skills across the 4 years. Furthermore, throughout the PhD program, they are also assessed during the dissertation proposal and dissertation defense.

Part V. Financial Aid and Assistantships

A. Financial Awards

1. Types of Awards, policy for granting financial awards, summer appointments, and number of years of support

Funding for PhD students within the Applied Physiology program will primarily come from faculty advisor grant support and department teaching assistantships. Research Assistant awards will be made on a competitive basis for students that best fit the needs of the sponsoring faculty member. Teaching Assistant awards will be made on a competitive basis for students prepared to teach and otherwise assist with undergraduate instruction.

Students can also apply for internal funding. For example, students can apply for any of the competitive awards offered through the UD Research Office or the Graduate College. This includes the University Fellowship Award, the University Graduate Scholar Award, and the University Dissertation Award.

Students can also apply for pre-doctoral support from funding agencies such as the American Heart Association. All students will be encouraged to apply for these external awards. The sponsoring faculty member will work with the student to develop the proposal.

Summer appointments will be made on an individual basis. If funds are available, it is expected that students will work full-time in the sponsoring faculty's laboratory during the summer months (with a reasonable amount of time for vacation).

Support for a student enrolled in the Ph.D. program will not normally be provided for more than 5 years.

2. Responsibilities and Evaluation of Students on Assistantships

Students are expected to maintain full-time status during their graduate studies. While time devoted to classes vs. laboratory work will vary each semester, students are expected to devote 20 hours per week to laboratory work early in the program (when course work is high), progressing to full-time in the lab upon completion of course work.

Specific teaching related responsibilities for TAs will be assigned by the Department Chair. The Department Chair will review student evaluations of teaching and possibly use other means of evaluating teaching effectiveness. Maintaining a TA position is contingent on satisfactory teaching performance, as well as the student making satisfactory performance toward the degree.

Specific responsibilities for RAs will be assigned by the faculty member supplying the funding for the RA position. Continuation or termination of the RA position will be at the discretion of that faculty member.

Part V. Departmental Operations

A. Responsibilities of program faculty include oversight of program policies and curriculum.

1. **Graduate Coordinator.** The department chair will appoint a graduate coordinator for the Applied Physiology Program from among the affiliated faculty. The graduate coordinator must minimally hold the rank of associate professor. The term of service for the graduate coordinator is three years, with no limit on the number of consecutive terms that may be served. The graduate coordinator serves as the program representative and point person and is responsible for the following:
 - Corresponding with prospective students,
 - Maintaining program records,
 - Holding elections for members of the Program Committee,
 - Chairing Program Committee meetings,
 - Admitting students to the program following approval of the Program Committee,
 - Chairing meetings of the Applied Physiology faculty as necessary for review/revision of program policies and curriculum,
 - Representing the Applied Physiology Program on the Department Curriculum Committee and the Department Chair's Council, and
 - Final approval of degree granting.
2. **Program Committee.** The Applied Physiology Program Committee will consist of three affiliated faculty members, including the graduate coordinator, and shall be chaired by the graduate coordinator. The two members of the Program Committee shall be elected by program faculty for staggered, three-year terms. Responsibilities of the Program Committee shall include:
 - Admission of students into the program,
 - Approval of student programs of study,
 - Approval of student selection of a new faculty advisor after admission to the program,
 - Selection of a panel of four faculty to serve as the Preliminary Exam Committee during each academic year,
 - Oversight of student progress in the program, including dismissal of students who fail to make satisfactory progress, and
 - Approval of dissertation committees.

A. General student responsibilities

1. Up to date information on general graduate student responsibilities can be found on the program website. <https://sites.udel.edu/kaap/graduate-programs/applied-physiology/>
2. Representation on Department Curriculum Committee. The Applied Physiology Program will have one elected student representative who will be invited to meetings of the Department Curriculum Committee.

B. Student Organization. Students in the program will be encouraged to periodically meet as a group so that the student representative can pass on any pertinent information from program meetings and so the group can discuss any issues or concerns they might have. Concerns can be brought to the attention of the program faculty by the elected student representative.

C. Travel for professional meetings or presentations

The department has set aside \$2,000 for each graduate student to use towards travel to a professional meeting(s). This can be divided across their years in the program or used for just one meeting.

APPENDIX A

RECOMMENDED ELECTIVE COURSES

Course	Credits
KAAP604 Sensorimotor Characteristics of Injury	3
KAAP605 Pathoetiology of Musculoskeletal Injuries	3
KAAP607 Motor Learning and Control	3
KAAP609 Concussion Pathology & Management	3
KAAP617 Introduction to Laboratory Instruments	3
KAAP620 Advanced Human Anatomy	3
KAAP 640 Topics in Physiology	3*
KAAP650 Life Span Motor Development	3
KAAP651 Neurophysiological Basis of Human Movement	3
KAAP655 Advanced Physiology of Exercise	3
KAAP665 12 Lead ECG Interpretation	3
KAAP666 Special Problem	1-6
KAAP686 Mathematics for Biomechanics	3
KAAP688 Electromyographic Kinesiology	3
KAAP808 Seminar in Motor Behavior	3
ANFS655 The Gut Microbiome: Microbial and Host Perspectives	4
BISC602 Molecular Biology of Animal Cells	3
BISC612 Advanced Cell Biology	3
BISC615 Developmental Biology	3
BISC626 Advanced Neuroanatomy	3
BISC627 Advanced Neurophysiology	3
BISC639 Developmental Neurobiology	4
BISC656 Evolutionary Genetics	3
BISC660 Environmental Physiology	3
BISC665 Advanced Molecular Biology & Genetics	3
BISC671 Cellular and Molecular Immunology	4
BISC675 Cardiovascular Physiology	3
BISC693 Human Genetics	3
BISC806 Advances in Cell and Organ Systems	3
BISC833 Special Topics in Biology	1-4
CHEM641 Biochemistry	3
CHEM642 Biochemistry	3
MMSC608 Molecular Preparatory Techniques	2
MMSC652 Basic Molecular Techniques	4
MMSC635 Practical Genomics, Proteomics & Bioinformatics	3
MMSC690 Clinical and Molecular Cell Biology	3
MMSC691 Human Molecular Genetics	3

*Can be taken more than once