

**Graduate Program Policy Statement**

**for the**

**Master of Science in Exercise Science**

**Approved by Faculty Senate May 9, 2011**

## **Part I. Historical Review**

### ***A. Purpose***

The Master of Science in Exercise Science was created to provide a concentrated program of academic study for students interested in developing a deeper understanding of theory and applications related to the functioning of the human body during physical activity.

### ***B. Evolution***

The Master of Science in Exercise Science degree program was initiated as a Master of Science Degree in Physical Education in March 1972 on an experimental basis, with the mission of providing concentrated academic opportunities for those students interested in developing a deeper understanding of theory and applications related to the functioning of the human body during physical activity. The University Graduate Committee approved the experimental program for a period of three years, and the program received permanent status in November 1975.

In May 1988, the graduate program was evaluated by a panel of educators from other universities with established and reputable programs of graduate study in physical education. The evaluating team made a number of recommendations regarding course offerings, faculty assignments, admission practices, research and facilities.<sup>1</sup> To date, all of the team's recommendations have been addressed.

In 1998, a University-wide reorganization of academic units resulted in the merging of the College of Physical Education, Athletics, and Recreation with the College of Nursing and the Department of Nutrition. The new college was named the College of Health and Nursing Sciences, and the Department of Physical Education was renamed the Department of Health and Exercise Sciences. The Master's degree program offered through the Department of Health and Exercise Sciences and formerly known as the Master's in Physical Education degree program, was changed to the M.S. with a major in Exercise Science in 1999. In 2003 the departments of Health and Exercise Science and Nutrition and Dietetics merged to form the Department of Health, Nutrition, and Exercise Sciences and in 2005 the College was renamed the College of Health Sciences.

In 2010, the Department of Health, Nutrition and Exercise Sciences was divided into the Department of Behavioral Health and Nutrition (BHAN) and the Department of Kinesiology and Applied Physiology (KAAP). Undergraduate and graduate degree programs in Exercise Science and the doctoral program in Applied Physiology are housed within KAAP.

### ***C. Degrees Offered***

---

<sup>1</sup>Graduate Program Review of the College of Physical Education, Athletics and Recreation at the University of Delaware, John Billing, University of North Carolina, Richard Nelson, Pennsylvania State University, Robert Singer, University of Florida, May, 1988.

The graduate program in Exercise Science offers a Master of Science degree with a major in Exercise Science and concentrations in biomechanics, exercise physiology, motor control, sports medicine, and clinical exercise physiology. Biomechanics is an interdisciplinary science that objectively interprets movement in living organisms. Emphasis is placed on techniques of measuring kinematic and kinetic characteristics of living organisms and on mathematical methods of analysis, with application in sports and rehabilitation. Exercise Physiology is a science that studies the effect of physical activity on the systems of the human body, with applications in physiological assessment, cardiac rehabilitation, and exercise prescription. Motor Control focuses on the development, acquisition and control of underlying processes responsible for movement. Emphasis may be placed on issues of motor behavior, development, learning and/or neuromuscular mechanisms. The concentration in Sports Medicine is focused on injury mechanisms, prevention and rehabilitation strategies in athletes for accelerated return to competition as well as applications of what is learned from competitive athletes to improving the health of all physically active individuals. The concentration in Clinical Exercise Physiology provides students with the opportunity to develop an in depth knowledge of and hands-on experiences in preventive and rehabilitative practices for patients with cardiopulmonary, metabolic, and musculoskeletal diseases as well as apparently healthy and low risk populations.

#### ***D. Administration and Faculty***

The Exercise Science Graduate Program Committee administers the graduate program in Exercise Science. The Committee is composed of Exercise Science faculty members from the Department of Kinesiology and Applied Physiology. The Department Curriculum Committee provides oversight of all programs and curricula in the department.

Faculty members who teach graduate courses and advise graduate students in Exercise Science must have a doctorate or equivalent. In some instances, faculty members with a master's degree and special expertise in an area of Exercise Science as a result of concentrated study, employment experience, or service may be recommended for graduate teaching. In such cases, the faculty member must have a record of successful teaching in a specialized area of Exercise Science, proven scholarly ability, and the endorsement of the Chair of the Department of Kinesiology and Applied Physiology.

## **Part II. Admission Policy**

### ***A. University Policy on Admission***

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

### ***B. University Admission Procedures***

Applicants must submit all of the following items directly to the University Office of Graduate and Professional Education using the online admission process before admission can be considered:

1. A completed application should be submitted no later than January 15 for the fall semester, and September 15 for the spring semester to ensure consideration.
2. A nonrefundable application fee must be submitted with the application. Credit card payment is accepted with the online application. Checks must be payable to the University of Delaware. Applications received without the application fee will not be processed. International students paying by check must use a check drawn on a US bank or an International Postal Money Order.
3. Applicants must submit a resume and a statement of professional goals and objectives.
4. Applicants must submit at least three letters of recommendation. All letters of recommendation should be managed electronically through the Office of Graduate and Professional Education.
5. The Graduate Record Examination (GRE) admission test scores are required. Applicants should request Education Testing Services (ETS) to report official test scores directly to the University of Delaware. The University of Delaware's institutional code for ETS is 5811. Applicants are encouraged to submit student copies of test scores in the application packets.
6. One official transcript of all US colleges and universities attended must be sent directly from the institution to the Office of Graduate and Professional Education 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.
7. 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.
8. International student applicants must demonstrate a satisfactory level of proficiency in the English language if English is not the first language. The Test of English as a Foreign Language (TOEFL) is offered by the ETS in test centers throughout the world. The University requires an official paper-based TOEFL score of at least 550, at least 213 on the computer-based TOEFL, or at least 79 on the Internet-based TOEFL for an applicant to be considered for admission. In addition, departments may elect to require that the applicant provide a score from the Test of Spoken English

(TSE). TOEFL scores and TSE/SPEAK scores more than two years old cannot be validated or considered official.

9. International students must be offered admission to the University and provide evidence of adequate financial resources before a student visa will be issued. The University has been authorized under federal law to enroll nonimmigrant alien students. International students are required to purchase the University-sponsored insurance plan or its equivalent.
10. All first-time international students are required to attend the Orientation Day for new international students, which takes place before classes begin.
11. It is a Delaware State Board of Health regulation and a University of Delaware mandate that all graduate students with a birth date after January 1, 1957, be immunized for measles, mumps and rubella (MMR). Also, students may be required to provide evidence of PPD (Mantoux) Tuberculosis Screening Test within 6 months prior to beginning classes. Students who are admitted beginning January 2002 are required to show proof of vaccination against meningococcal disease unless granted a waiver. Students should refer to and complete the Student Health Service Immunization Documentation form upon admission.

### ***C. Specific Requirements for Admission into the Exercise Science Graduate Program***

The Exercise Science Graduate Program Committee makes admission decisions. Students will be admitted to the program based upon enrollment availability and their ability to meet the following recommended entrance requirements.

- Baccalaureate degree from an accredited college or university
- A GRE score of 1050 on combined math and verbal sections
- A undergraduate GPA of 3.0 or higher
- Acceptance by a primary advisor

Recommended prerequisites for Biomechanics include:

- Math through calculus
- Anatomy
- One year of physics
- Computer programming experience

Recommended prerequisites for Exercise Physiology and Clinical Exercise Physiology include:

- One year of biology
- Two years of chemistry
- One year of physics

Recommended prerequisites for Motor Control and Sports Medicine include:

- Math through calculus
- Anatomy and physiology
- One year of biological or physical science

#### ***D. Admission Application Processing***

The admission process is completed as follows: First, completed applications consisting of the application form, undergraduate/graduate transcripts, official GRE scores, three letters of recommendation, and the written statement of goals and objectives are reviewed by the Exercise Science Graduate Program Committee. If the student is admissible, the application is circulated to all appropriate Exercise Science faculty in an effort to match the student with a faculty advisor. Faculty members tend to advise students whose background, goals, and objectives are compatible with their own areas of research and funding. Admissible applicants are formally admitted into the program once a faculty member has agreed to accept the applicant as an advisee.

Applications are processed as they are submitted. However, students wishing to be considered for graduate funding must complete the application process no later than January 15 of the preceding year. The Graduate Program Committee typically requires a period of one month to process completed applications.

#### ***E. Admission Status***

Students admitted into the Exercise Science graduate program may be admitted into one of three categories.

- 1) **Regular.** Regular status is offered to students who meet all of the established entrance requirements, who have a positive record of 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.** Provisional status is offered to students who are seeking admission to the degree program but lack one or more of the specified requirements for admission. 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.
- 3) **Visiting Student Scholars.** Visiting scholar admission is offered to students who wish to transfer graduate credits to another institution. Visiting students must submit a letter from their graduate dean or registrar certifying that they are graduate students in good standing at another institution. Such letters will be accepted in lieu of the transcripts and GRE scores which are required of all other applicants. Visiting scholar status is gradually limited to a period of two years and is a non-degree status. If visiting students desire to transfer to regular status at the University of Delaware, they must meet the stated admissions

standards. Admission as a visiting student implies no commitment about later admission as a regular student or about transferability of courses from the student's original institution.

### **Part III. Degree Requirements for the Master of Science with a major in Exercise Science**

#### ***A. Course Requirements***

The Master of Science with a major in Exercise Science requires 27 credits of coursework at the 600 or 800 level, and 6 credits of thesis for the Biomechanics, Exercise Physiology, Motor Control, and Sports Medicine concentrations. The 27 credits of coursework are specified in the individual planned programs of study, and must include 18-21 credits of coursework in courses within Exercise Science, and 6-9 credits of coursework in cognate areas as specified by the requirements for each concentration.

The concentration in Clinical Exercise Physiology requires 24 credits of coursework at the 600 or 800 levels, and [9-12](#) credits of [practicuminternship](#).

Students in the Master's degree program are allowed to take a maximum of six credits of independent study. Additional independent study credits will not count towards graduation.

A maximum of 9 graduate credit hours may be transferred from another institution to the degree.

Candidates for the degree must have regular status.

#### ***B. Revisions to Planned Program of Study***

Students who wish to make changes to their program of study must first obtain permission from their advisor. The advisor must then make a written request to the Graduate Program Committee to revise the program of study.

#### ***C. Regulations Governing Theses***

Students are responsible for adhering to all university policies and deadlines related to submission of forms and final thesis documents. Deadlines and policies can be found at the website for the Office of Graduate and Professional Education.

- 1) *Establishment of Thesis Committee:* The student and his/her advisor will create a thesis committee at the time the student begins to develop the thesis proposal. The thesis committee shall consist of at least two University faculty from within the Department of Kinesiology and Applied Physiology, and at least one additional faculty member from inside or outside of the Department. The definition of University faculty shall include professional staff members who hold secondary faculty appointments within the department. Faculty who have retired or resigned from the University may continue to chair committees of students whose work began under their direction prior to their retirement or departure from the University. Individuals who do not meet the above stated

definition given for faculty status may co-chair the thesis committee provided that the other co-chair meets the definition for faculty status. Outside faculty shall include individuals not affiliated with the M.S. in Exercise Science program. These may be individuals from outside of the University who are nationally recognized for their expertise in the area of study specified by the thesis. The Graduate Program Committee must approve committee members from outside of the University. It is the responsibility of the thesis advisor to replace members who withdraw from the committee during the thesis process.

- 2) *Defense of the Thesis Proposal:* The format of the thesis must adhere to the University's Thesis and Dissertation Manual. This document is available on the University's website at <http://www.udel.edu/gradoffice/polproc/#manual>. A copy of the thesis proposal must be delivered to each facility that houses Department faculty at least one week prior to the proposal defense. A copy of the thesis proposal must be delivered to the members of the thesis committee at least one week in advance of the proposal defense. Proposals that involve the use of human subjects must receive approval from the University Institutional Review Board (IRB). Details for creating consent forms and submitting studies for review by the IRB can be obtained from the UD Research Office.

All Department faculty and students will be invited to the thesis proposal defense. The candidate will present a summary of the proposed research, and will then address questions from the committee, attending faculty, and invited guests. After all questions have been addressed, the thesis committee will meet privately to decide whether the proposal is accepted, rejected, or accepted with stipulations. Details of the meeting will then be presented to the student. A majority of committee votes will decide the outcome. In the event of a split vote, the decision to accept or reject the thesis proposal will rest with the thesis advisor.

Thesis committee members should sign the final copy of the approved proposal. A signed copy of the approved thesis proposal should be forwarded to the Exercise Science Graduate Coordinator. Students who fail the thesis proposal defense will receive one additional opportunity to repeat the process and defend a new or modified thesis proposal.

- 3) *Application for Advanced Degree:* The deadline for degree application is September 15 for December degree conferral, December 15 for Winter degree conferral, February 15 for May degree conferral, and May 15 for August degree conferral. Students must deliver the completed and signed degree application form to the Office of Graduate and Professional Education with payment (you may attach a personal check made payable to the University of Delaware or pay at the Cashiers Office.) The Master's fee is \$50; Ph.D., D.P.T. and Ed.D. fee is \$95.
- 4) *Defense of the Thesis:* The format of the thesis must adhere to the University's Thesis and Dissertation Manual. This document is available on the University's website at <http://www.udel.edu/gradoffice/polproc/#manual>. Thesis content and organization should be appropriate for the journal(s) in which the thesis is targeted for publication with

additional literature review materials contained in an appendix. A copy of the thesis must be delivered to the members of the thesis committee at least one week in advance of the defense.

- 5) All Department faculty and graduate students will be invited to the thesis defense. The candidate will present a summary of the completed research, and will then address questions from the committee, attending faculty, and invited guests. After all questions have been addressed, the thesis committee will meet privately to decide whether the thesis is accepted, rejected, or accepted pending revisions. Details of the meeting will then be presented to the student. A majority of committee votes will decide the outcome. In the event of a split vote, the decision to accept or reject the thesis will rest with the thesis advisor. Students must pass the thesis defense in no more than two attempts in order to complete the requirements for the Master of Science degree with a major in Exercise Science. *Preparing the Final Thesis Document.* Acquire the signatures on the first approval page (3 originals required on 25% cotton bond paper). When you submit your first approval page to the Dean's office for signature, also submit a printed version of your thesis/dissertation/executive paper for the Dean's review. The Office of Graduate and Professional Education takes your paper to the Vice Provost for his signature. Do not contact the Vice Provost directly for his signature. Doctoral Students: Acquire the signatures of committee members on the second approval page (3 originals required on 25% cotton bond paper).

Prepare a PDF version of your thesis/dissertation. You should inquire in your program whether or not a bound paper copy is required to be submitted to your adviser or department.

Students must schedule an appointment at the Office of Graduate and Professional Education on or before the deadline to submit the required documents for your master's thesis. Please email [marym@udel.edu](mailto:marym@udel.edu) to request an appointment.

The University reserves the right to duplicate a thesis for distribution to other libraries or for the use of individual scholars. However, the University will not publish a thesis for general distribution without the written consent of the author. If copyrighting of a master's thesis is desired, it must be done by direct application to the Copyright Office in Washington, D.C. Published works are eligible for copyright protection in the United States if the work is first published in the United States.

## **Part IV. Fellowship, Scholarship and Assistantship Policy**

### **A. Terms and Conditions**

Eligibility for initial employment as a Graduate Assistant in the Department of Kinesiology and Applied Physiology requires the following:

1. Regular admission into the master's program in Exercise Science, and

2. Ability to teach or otherwise provide assistance in an area of program need.

The Graduate Program Committee shall make recommendations to the Department Chair, who shall make the final determination of employment.

The term of employment shall normally be two years. However, continuing employment during that two year period shall be contingent upon the following:

1. Satisfactory teaching performance, as determined by the Department Chair following consultation with the Activity Program Director and/or the supervising faculty.
2. Maintenance of at least a 3.0 GPA over all courses taken, and
3. Satisfactory, regular progress toward the master's degree in Exercise Science.

#### B. Workload Assignment

The Department Chair shall make assignment of Graduate Assistant duties on a semester-by-semester basis. Duties assigned shall represent a time-wise commitment by the Graduate Assistant of no more than 20 hours per week. Responsibilities may include teaching classes in the University's Lifetime Activity Program, teaching lecture classes, and/or teaching laboratory classes in undergraduate programs within the Department of Kinesiology and Applied Physiology. Other ongoing and incidental duties may also be assigned. Specific responsibilities for Graduate Assistants teaching activity, lecture, and laboratory classes are listed below.

##### Weekly Responsibilities for Graduate Assistants Assigned to an Activity Class:

Preparation.....	*1.5 hrs.
Read and know background content materials	
Formulate lesson plans	
Pick up needed equipment (and return equipment at end of class)	
Contact time.....	3.0 hrs.
Deliver introductory lecture to class	
Organize and supervise student activities	
Answer student questions and troubleshoot	
Provide a wrap-up session at the end	
Preparing and grading exams (averaged over semester) .....	0.5 hrs.
<b>TOTAL .....</b>	<b>5.0 hrs.</b>

\*In the case of an assignment involving multiple sections of the same class, 2.0 total hours of preparation time per week shall be considered sufficient for all sections.

##### Weekly Responsibilities for Graduate Assistants Assigned to a lecture Class:

Preparation	2-3.0 hrs.
Read and know background content materials	
Formulate lesson plans	
Contact time	2-3.0 hrs
Formulate lesson plans	
Deliver lecture to class	
Facilitate class discussion, problem solving	

Organize and supervise student activities	
Answer student questions and troubleshoot	
Grading Quizzes/Exams -assignments	4.0 hrs.
<b>TOTAL</b>	<b>8-10.0 hrs.</b>

Weekly Responsibilities for Graduate Assistants Assigned to a Laboratory Class:

Preparation	1.5 hrs.
Read and know background content materials	
Meet with faculty instructor to review previous week's lab session and discuss plans for the current week's laboratory experiences	
Plan organizational format for laboratory session	
Set up needed equipment (and properly store equipment at end of class)	
Contact time	2.0 hrs.
Return graded lab reports or quizzes	
Deliver introductory lecture to class	
Organize and supervise student activities	
Answer student questions and troubleshoot	
Provide a wrap-up session at the end	
Grading Lab Reports and Quizzes	4.0 hrs.
(First time, also attend lectures)	2.0 hrs.
<b>TOTAL</b>	<b>7.5-9.5 hrs.</b>

\*In the case of an assignment involving multiple sections of the same class, 2.0 total hours of preparation time per week shall be considered sufficient for all sections.

**B. Other Responsibilities**

Graduate Assistants shall also be expected to perform other duties at the request of the Department Chair or Activity Program Director, which may include, but are not limited to the following:

1. Cover classes for absent instructors,
2. Assist with special events in which the program is participating, and
3. Assist the Activity Program Director or supervising faculty for a laboratory class or with other activities as needed.
4. Work under the supervision of a faculty member in a department research laboratory by mutual agreement of the Department Chair and the supervising faculty member.

**Part V. General Information Relevant to Master's Candidates**

**A. Graduate Course Numbering System.**

Graduate credit may be earned for courses numbered 600 to 699, 800 to 898, and 900 to 998. (Courses numbered 600 to 699 are graduate-level courses open to qualified, advanced undergraduates by permission of the instructor.)

## B. Application for Advanced Degree.

The deadline for degree application is September 15 for December degree conferral, December 15 for Winter degree conferral, February 15 for May degree conferral, and May 15 for August degree conferral. Students must deliver the completed and signed degree application form to the Office of Graduate and Professional Education with payment (you may attach a personal check made payable to the University of Delaware or pay at the Cashiers Office.) The Master's fee is \$50; Ph.D., D.P.T. and Ed.D. fee is \$95.

## C. Graduate Grade Point Average.

Students must have a minimum overall cumulative grade point average of 3.0 to be eligible for the degree. In addition, the grades in courses applied toward the degree program must equal at least 3.0. 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 index. Candidates should see that their instructors have submitted all final grades. Temporary grades of "S" (Satisfactory) are assigned for 868 (Research) and 869 (Master's Thesis) until a final letter grade is submitted upon the completion of the thesis or dissertation.

## D. Time Limits for the Completion of Degree Requirements.

Time limits for the completion of degree requirements begin with the date of matriculation and are specifically expressed in the student's letter of admission. The University policy for students entering a master's degree program is ten consecutive semesters to complete the degree requirements. Students completing the requirements for the master's degree who are subsequently granted permission to continue toward the doctoral degree are given an additional ten consecutive semesters. Students who change their degree plan and have transferred from one degree program to another degree program are given ten consecutive semesters from the beginning of the first year in the latest program.

## E. Extension of the Time Limit.

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 advisory committee and the Exercise Science Graduate Coordinator. The department will forward the request to the Office of Graduate Studies. The Office of Graduate and Professional Education will determine the student's eligibility for a time extension and will notify the student in writing of its decision to grant an extension of time.

## F. Sustaining Status for Candidates Pursuing Thesis/Dissertation Degree Option.

Once a graduate student has completed all required course credits needed for the degree (including six credits of Master's thesis [869]) and all other degree requirements except the

submission of thesis, the student is required to maintain his/her matriculation in the degree program during the fall and spring semesters by registering for Master's Sustaining: Thesis (UNIV 899). All students, including sustaining students, are required to be registered in the semester in which the degree is officially awarded. Sustaining registration is required for summer session if the student completes the degree in summer session. (Sustaining registration is never required for winter session as graduate degrees are not awarded at the conclusion of winter session.)

#### G. Transfer of Credit Earned as a Continuing Education Student at the University of Delaware.

Students who complete graduate credits with the classification of CEND (Continuing Education Non-degree) at the University of Delaware may use a maximum of 9 graduate credits earned with this classification toward their graduate degree. The CEND credits, grades, and quality points become a part of the student's academic record and grade point average. CEND credit can be transferred provided that: (a) the course was at the 600-800 level, (b) the course was taken within the time limit appropriate for the degree, (c) the course was approved by the student's adviser and the chair of the student's major department, and (d) the course was in accord with the specific degree program as specified by the unit's Graduate Program Policy Statement.

#### H. Transfer of Credit from Another Institution.

Graduate credit earned at another institution will be evaluated at the written request of the student. Such a request should be directed to the student's major department using a Request for Transfer of Graduate Credit form. A maximum of 9 credits required for the degree will be accepted provided that such credits: (a) were earned with a grade of no less than B-, (b) are approved by the student's adviser and the chair of the student's major department, (c) are in accord with the specific degree program of the student as specified by the unit's Graduate Program Policy Statement, (d) are not older than five years, and (e) were completed at an accredited college or university. The credits, but not the grades or quality points, are transferable to University of Delaware graduate records. Graduate courses counted toward a degree received elsewhere may not be used. Credits earned at another institution while the student was classified as a continuing education student at that institution are not eligible to be transferred to one's graduate degree at the University of Delaware. Credits from institutions outside of the United States are generally not transferable to the University of Delaware.

#### I. Transfer of Credit from the Undergraduate Division at the University of Delaware.

Students who wish to transfer credits from their undergraduate record to their graduate record may transfer a limited number by arranging with the department to have these courses approved by their instructors before the courses are taken. These courses must be at the 600-level, and the student must perform at the graduate level. They must be in excess of the total required for the baccalaureate degree, must have grades of no less than B-, and must not be older than five years. The credits, grades, and quality points will transfer.

J. Credit for "Special Problem" Course Taken as a Graduate Student.

Some 400-level courses may be completed for graduate credit if the graduate student does additional work. Students must register for the course at the graduate level using the departmental number of 666. For example, a graduate student who attends PSYC 425 and fulfills additional graduate level requirements to earn graduate credit should register for PSYC 666, not PSYC 425. The student may process a titling form for the 666 numbered course.

K. Expiration of Credit.

Course credits expire five years after the course has been completed.

**APPENDIX A**  
**Concentration Areas**

**Master of Science in Exercise Science  
Concentration: Exercise Physiology**

Exercise Physiology is a science that studies the effect of physical activity on the systems of the human body. Opportunities are available in scientific research, physiological assessment, cardiac rehabilitation, and exercise prescription. Students in the MS program in exercise physiology are required to conduct research and complete a thesis.

**Credit Requirements:**

Credits within Exercise Science	18-21
Cognate areas outside Exercise Science	6-9
Thesis	6
Total number of required credits	33

**A. Required Credits Within Exercise Science**

KAAP 601 Research Methods	3
KAAP 602 Data Analysis and Interpretation in Health Sciences	3
KAAP 603 Seminar in Exercise Science (3 semesters required)	3
KAAP 655 Advanced Physiology of Exercise	3
KAAP 804 Clinical Measures in Exercise Physiology	3
At least one of the following courses	
KAAP 675 Exercise Testing and Prescription	3
KAAP 802 Human Cardiovascular Control	3
Total from Area A	18-21

**B. A minimum of 2 courses from the following:**

KAAP 607 Motor Learning and Control	3
KAAP 615 Advanced Mammalian Physiology I	3
KAAP 616 Advanced Mammalian Physiology II	3
KAAP 650 Life Span Motor Development	3
KAAP 651 Neurophysiological Basis of Movement	3
KAAP 665 12-Lead ECG Interpretation	3
KAAP 666 Special Problem	1-6
KAAP 675 Exercise Testing and Prescription	3
HDFS 605 Impact of Aging on the Family	3
BISC 675 Cardiopulmonary Physiology	3
STAT 615 Design and Analysis of Experiments	3
STAT 617 Multivariate Methods	3
Total from Area B	6-9

**C. KAAP 869 Thesis in Exercise Physiology**

KAAP 869 Thesis in Exercise Physiology	6
Total from Area C	6

**Master of Science in Exercise Science  
Concentration: Biomechanics**

Biomechanics is an interdisciplinary science that objectively interprets movement in living organisms. Emphasis is placed on techniques of measuring kinematic and kinetic characteristics of living organisms and on mathematical methods of analysis. Students in the MS program in biomechanics are required to conduct research and complete a thesis.

**Credit Requirements:**

Credits within Exercise Science	18-21
Cognate areas outside Exercise Science	6-9
Thesis	6
Total number of required credits	33

**A. Required Credits Within Exercise Science**

KAAP 601 Research Methods	3
KAAP 602 Data Analysis and Interpretation in Health Sciences	3
KAAP 603 Seminar in Exercise Science (3 semesters required)	3
KAAP 617 Intro. to Laboratory Instrumentation	3
KAAP 627 Biomechanical Methods	3
At least one of the following courses:	
KAAP 687 Seminar in Biomechanics	3
KAAP 688 Electromyographic Kinesiology	3
Total Credits from Area A	18-21

**B. A minimum of 2 courses from the following:**

BMSC 686 Mathematics for Biomechanics	3
KAAP 607 Motor Learning and Control	3
KAAP 650 Life Span Motor Development	3
KAAP 651 Neurophysiological Basis of Movement	3
KAAP 655 Advanced Physiology of Exercise	3
KAAP 666 Gait Laboratory Internship	3
MEEG 612 Biomechanics of Human Movement	3
MEEG 682 Clinical Biomechanics	3
MEEG 683 Orthopedic Biomechanics	3
STAT 615 Design and Analysis of Experiments	3
STAT 617 Multivariate Methods	3
EDUC 862 Design and Analysis of Experiments	3
PHYT 604 Functional Anat./Biomechanics	3
Total Credits from Area B	6-9

**C. KAAP 869 Thesis in Biomechanics**

Total Credits from Area C	6
---------------------------	---

**Master of Science in Exercise Science  
Concentration: Motor Control**

Motor control is an interdisciplinary science that focuses on neural, physical, and behavioral aspects of the development and regulation of human movement. Emphasis is placed on changes that occur across the lifespan or due to pathology, and adaptations that occur in response to motor learning or exercise training. Students in the MS program in Motor Control are required to conduct research and complete a thesis.

Credit Requirements:

Credits within Exercise Science	18
Cognate areas outside Exercise Science	9
Thesis	6
Total number of required credits	33

A. Required Credits Within Exercise Science

KAAP 601 Research Methods	3
KAAP 602 Data Analysis and Interpretation in Health Sciences	3
KAAP 603 Seminar in Exercise Science (3 semesters required)	3
KAAP 607 Motor Learning and Control	3
KAAP 651 Neurophysiological Basis of Movement	3
KAAP 808 Seminar in Motor Behavior	3
Total Credits from Area A	18

B. A minimum of 3 courses from the following:

KAAP 615 Advanced Mammalian Physiology I	3
KAAP 616 Advanced Mammalian Physiology II	3
KAAP 617 Intro. to Laboratory Instrumentation	3
KAAP 627 Biomechanical Methods	3
KAAP 650 Life Span Motor Development	3
KAAP 666 Special Problem	3
STAT 615 Design and Analysis of Experiments	3
STAT 617 Multivariate Methods	3
EDUC 862 Design and Analysis of Experiments	3
EDUC 823 Learning and Development	3
PSYC 612 Human Psychophysiology	3
PSYC 626 Advanced Neuroanatomy	3
Total Credits from Area B	9

C. KAAP 869 Thesis in Motor Control

Total Credits from Area C	6
---------------------------	---

**Master of Science in Exercise Science  
Concentration: Sports Medicine**

Credit Requirements:

Credits within Exercise Science	18
Cognate areas outside Exercise Science	9
Thesis	6
Total number of required credits	33

A. Required Credits Within Exercise Science

KAAP 601 Research Methods	3
KAAP 602 Data Analysis and Interpretation in Health Sciences	3
KAAP 603 Seminar in Exercise Science (3 semesters required)	3
KAAP 604 Sensorimotor Characteristics of Injury	3
KAAP 605 Pathoetiology of Musculoskeletal Injury	3
KAAP 606 Evidence-Based Sports Medicine	3
Total Credits from Area A	18

B. A minimum of 3 courses from the following:

(At least 2 courses must come from the same cognate area)

Motor Control

KAAP 607 Motor Learning and Control	3
KAAP 650 Life Span Motor Development	3
KAAP 651 Neurophysiological Basis of Human Movement	3
KAAP 808 Seminar in Motor Behavior	3

Biomechanics

KAAP 617 Intro. to Laboratory Instrumentation	3
KAAP 627 Biomechanical Methods	3
KAAP 687 Seminar in Biomechanics	3
KAAP 688 Electromyographic Kinesiology	3

Exercise Physiology

KAAP 615 Advanced Mammalian Physiology I	3
KAAP 616 Advanced Mammalian Physiology II	3
KAAP 655 Advanced Physiology of Exercise	3
KAAP 665 12 Lead ECG Interpretation	3
KAAP 675 Exercise Testing and Prescription	3
KAAP 802 Human Cardiovascular Control	3
KAAP 804 Clinical Measures in Exercise Physiology	3

Research Design and Statistics

BISC 643 Biological Data Analysis	3
STAT 615 Design and Analysis of Experiments	3
STAT 617 Multivariate Methods	3
EDUC 862 Design and Analysis of Experiments	3
KAAP 666 Special Problem	3
KAAP 840 Advanced Human Anatomy	3
Total Credits from Area B	9

C. KAAP 869 Thesis in Sports Medicine	6
---------------------------------------	---

Total Credits from Area C

6

## Master of Science in Exercise Science Concentration: Clinical Exercise Physiology

The concentration in Clinical Exercise Physiology will provide students with the opportunity to develop an in depth knowledge of and hands-on experiences in preventive and rehabilitative practices for patients with cardiopulmonary, metabolic, and musculoskeletal diseases as well as apparently healthy and low risk populations. Clinicians will act as part of a health care team that develops exercise recommendations, administers diagnostics tests and provides guidance that promotes healthy lifestyles. The concentration will also help students prepare for the American College of Sports Medicine's (ACSM) clinical exercise physiology registry examination (RCEP) and/or the ACSM's clinical exercise specialist certification, which focuses on cardiovascular and pulmonary rehabilitation. This program offers core requirements that must be completed by all students, ~~and elective courses that permit the student to choose courses in areas of interest to them.~~ The Clinical Exercise Physiologist Specialization is designed to be a 2-year/12 month, non-thesis program. ~~Students wishing to pursue research careers or doctoral degrees may choose to complete the thesis requirements in Exercise Physiology.~~

### Credit Requirements:

Credits within Exercise Science	15
Elective Credits	9
Internship	9
Total number of required credits	33

### ~~A. Courses Required within Exercise Science~~

~~A minimum of 15 credits of coursework from the following list:~~

<del>KAAP 655 Advanced Exercise Physiology</del>	<del>3</del>
<del>KAAP 665 12 Lead ECG Interpretation</del>	<del>3</del>
<del>KAAP 675 Exercise Testing and Prescription</del>	<del>3</del>
<del>KAAP 615 Advanced Mammalian Physiology I</del>	<del>3</del>
<del>KAAP 616 Advanced Mammalian Physiology II</del>	<del>3</del>
<del>KAAP 804 Clinical Measures in Exercise Physiology</del>	<del>3</del>
<del>Total from Area A</del>	<del>15</del>

### ~~B. A minimum of 3 courses from the following:~~

<del>KAAP 651 Neurophysiological Basis of Movement</del>	<del>3</del>
<del>NTDT 615 Advanced Nutrition and Physical Activity</del>	<del>3</del>
<del>NTDT 640 Nutrition and Aging</del>	<del>3</del>
<del>NTDT 680 Exercise, Nutrition and Bone Health</del>	<del>3</del>
<del>KAAP 802 Human Cardiovascular Control</del>	<del>3</del>
<del>HLPR 809 Health Behavior</del>	<del>3</del>
<del>HLPR 815 Health and Older Adults</del>	<del>3</del>
<del>Total from Area B</del>	<del>9</del>

### ~~C. Internship~~

<del>KAAP 671 Clinical Exercise Physiology Internship</del>	<del>9</del>
<del>Total from Area C</del>	<del>9</del>

**Courses Required within Exercise Science:**

KAAP 665	12 Lead ECG Interpretation	3
KAAP 675	Clinical Exercise Physiology I	4
KAAP 676	Clinical Exercise Physiology II	4
KAAP 677	Administration and Organization of Cardiopulmonary and Wellness Programs	3
KAAP 678	Cardiopulmonary Pathophysiology And Pharmacology	3
KAAP 679	Primary Preventive Medicine Strategies Primary	3
KAAP 680	Clinical Exercise Physiology Comprehensives	3
KAAP 681	Clinical Exercise Physiology Competencies Portfolio	1
KAAP 671	Clinical Exercise Physiology Internship	12
<b>Total</b>		<b>36</b>