Doctor of Philosophy in Exercise and Nutrition Sciences

The doctor of philosophy in Exercise and Nutrition Sciences prepares future scholars and industry experts to teach and mentor students, lead research and development, and create knowledge relating to the impacts of exercise/physical activity and nutrition on human health and function. This program builds on the MS program in Exercise and Nutrition Sciences at MSU, or related MS degrees from other institutions. The program will leverage expertise of exercise science program faculty and nutrition sciences program faculty and established collaborations with other STEM researchers and and programs at MSU to deliver the following doctoral options: 1) exercise nutrition, metabolism, and physiology, and 2) biomechanics and motor control. These applied science options build on the foundational sciences of biochemistry, cellular and molecular biology, anatomy, physiology, physics, and mathematics. The program requires a minimum of 60 credits, including a minimum of 18-28 credits of dissertation and consideration of up to 21 non-research credits from a master's degree. Coursework for both options focuses on core content for exercise and nutrition sciences, research design and statistical analyses, and advanced coursework specific to each option. Additionally, each student will develop an academic portfolio that includes research (presentations, peer-reviewed publications, grant writing) and teaching (development of course materials, instruction, student mentoring)

Exercise Nutrition, Metabolism, and Physiology Curriculum

18-28 cr of Kin 690 Dissertation credit

Take at least 3 of the following classes:

KIN 515	Exercise Performance and Nutrition	3
KIN 545	Graduate Exercise Physiology	3
KIN 594	Seminar	1
KIN 525	Neuromechanics of Human Movement	3
KIN 535	Advanced Motor Control	3
NUTR 421	Macronutrient Metabolism	3
NUTR 511	Exercise Metabolism and Health	3
NUTR 520	Advanced Diet and Disease Systems	3

Take at least 2 of the following classes:

STAT 425	Biostatistical Data Analysis	3
STAT 431	Nonparametric Statistics	3
STAT 437	Introduction to Applied Multivariate Analysis	3
STAT 439	Introduction to Categorical Data Analysis	3
STAT 441	Experimental Design	3
STAT 448	Mixed Effects Models	3
STAT 511	Methods of Data Analysis I	3
STAT 512	Methods of Data Analysis II	3
STAT 525	Biostatistics	3

Take at least 2 of the following classes:

BCH 524	Mass Spectrometry	3
BCH 544	Molecular Biology	3
BCH 543	Proteins	3
BCH 546	Metabolomics and Systems Biology	3
BIOB 524	Ethical Practice of Science	3
BIOE 540	Analysis of Ecological Communities	3
CHTH 540	Principles of Epidemiology	3
MB 505	Host-Associated Microbiomes	4
MB 520	Microbial Physiology	3
Total Credits		**60**

Up to 30 credits from the above list at MSU or equivalent from another university earned for the MS may be considered for credit toward the PhD.

Biomechanics/Motor Control Curriculum

Option 1: Master's and PhD at MSU (5 years to complete PhD)

Existing MS in Exercise and Nutrition Sciences (2 years)
Total MS program: 35 credits; considered for credit toward PhD: 18-21 credits.

HHD 512	Research Methods in HHD II	3
KIN 515	Exercise Performance and Nutrition	3
or NUTR 511	Exercise Metabolism and Health	
KIN 525	Neuromechanics of Human Movement	3
KIN 535	Advanced Motor Control	3
KIN 545	Graduate Exercise Physiology	3
KIN 590	Master's Thesis	1-10
KIN 594	Seminar	1
STAT 511	Methods of Data Analysis I	3
Electives		3

PhD in Exercise and Nutrition Sciences (3 years)

Required Core: 24 - 34 credits

KIN 594	Seminar	6
KIN 690	Dissertation	18-28
Coursework (program developed in consultation with Chair): 5 - 18 credits		
KIN 435	Advanced Motor Control	3
KIN 592	Independent Study	1-3
STAT 425	Biostatistical Data Analysis	3
STAT 431	Nonparametric Statistics	3
STAT 437	Introduction to Applied Multivariate Analysis	3
STAT 439	Introduction to Categorical Data Analysis	3
STAT 441	Experimental Design	3
STAT 448	Mixed Effects Models	3
STAT 511	Methods of Data Analysis I	3
STAT 512	Methods of Data Analysis II	3
Total Credits		**60**

Option 2: Master's done elsewhere, start directly into PhD (3-4 years depending on prior coursework)

12-21 credits considered for credit toward the PhD (exact courses to be transferred for credit determined by department)

PhD in Exercise and Nutrition Sciences (3-4 years) 39-48 credits

Required Core: 24 - 34 credits

KIN 594	Seminar	6
KIN 690	Dissertation	18-28

Coursework (program developed in consultation with Chair) 5 - 24 credits		
KIN 515	Exercise Performance and Nutrition	3
KIN 525	Neuromechanics of Human Movement	3
KIN 535	Advanced Motor Control	3
KIN 545	Graduate Exercise Physiology	3
STAT 425	Biostatistical Data Analysis	3
STAT 431	Nonparametric Statistics	3
STAT 437	Introduction to Applied Multivariate Analysis	3
STAT 441	Experimental Design	3
STAT 448	Mixed Effects Models	3
STAT 511	Methods of Data Analysis I	3
STAT 512	Methods of Data Analysis II	3
Total Credits		**60**