BIOMECHANICS AND KINESIOLOGY, PHD

The doctoral degree in biomechanics and kinesiology at the University of Nebraska at Omaha (UNO) is a joint program between the Department of Biomechanics and the School of Health and Kinesiology. The degree is based on the physiology, biochemistry, biophysics, motor control and development, and psychology of human movement. The program is aimed at developing researchers who are working to improve movement function and physical activity using evidence-based approaches through interdisciplinary clinical and translational research. A problem-solving approach is used across the age and health spectrum for disease prevention, health enhancement, physical rehabilitation, and motivation for physical activity. The program offers four areas of concentration in biomechanics, physiology of exercise, motor development and control, and physical activity.

Program Related Information

Program Contact

unobiomechanics@unomaha.edu

Program Website (https://www.unomaha.edu/college-of-education-health-and-human-sciences/biomechanics-core-facility/academic-programs/graduate-programs.php)

Admissions

General Application Requirements and Admission Criteria (http://catalog.unomaha.edu/graduate/admission/)

Application Deadlines

Spring 2026, Summer 2026, and Fall 2026: Applications for this program are accepted on a rolling basis. All materials must be submitted prior to the beginning of the semester in which the student has elected to begin coursework. To receive full consideration for departmental assistantships, applications must be received by January 31st.

Other Requirements

- GPA of 3.2 in master's program or in the last 30 hours of previous graduate work
- Master's degree, or minimum of 30 graduate hours in a related field, e.g., health, physical therapy
- **English Language Proficiency:** Applicants are required to have a command of oral and written English. Those who do not hold a baccalaureate or other advanced degree from the United States, **OR** a baccalaureate or other advanced degree from a predetermined country on the waiver list (https://www.unomaha.edu/office-of-graduate-studies/admissions/entrance-exams.php), must meet the minimum language proficiency score requirement in order to be considered for admission.
    - Internet-based TOEFL: 80, IELTS: 6.5, PTE: 53 with a score of at least 20 in all categories (listening, reading, writing, and speaking), Duolingo: 110
- **Statement of Purpose**: Needs to state goals and objectives for seeking the degree. Students will identify their intended area of focus and the name of the faculty advisor with whom they wish to work (maximum 500 words).
- **Writing Sample**: Provide a writing sample which could include: first-author scientific paper, thesis proposal, research paper, or similar example showcasing the student's aptitude for writing.
- **Resume/CV**
- **Letters of Recommendation:** Three are required
- Undergraduate Course Deficiencies: these courses are determined by the student's mentor in collaboration with their supervisory committee. Each student's individual deficiency courses will be approved in their program of study.
- Identification and confirmation by a faculty member willing to act as advisor and mentor to the student (see program-related information). The applicant is expected to contact a potential advisor to determine if a suitable match in interests exists. This assures that the student will be able to develop a program of study that meets the specific goals intended. Please note that assistantship funding is a separate process and should be discussed with your faculty mentor.

Degree Requirements

Code	Title	Credits
Required Courses		**21**
BMKI 9001	RESEARCH IN HEALTH & KINESIOLOGY	
or BMKI 9031	BIOSTATISTICS IN BIOMECHANICS I	
BMKI 9041	ADVANCED STATISTICS	
or BMKI 9040	BIOSTATISTICS IN BIOMECHANICS II	
BMKI 9000	GRANT WRITING FOR THE BIOMEDICAL SCIENCES	
BMKI 9010	PRINCIPLES AND PRACTICE OF BIOMEDICAL RESEARCH	
Take the following course for a minimum of 9 credit hours:		
BMKI 9910	DOCTORAL SEMINAR	
Concentrations		
See Biomechanics and Kinesiology, PhD Concentrations		24
BMKI 9990	DISSERTATION	15
Total Credits		**60**

1 If required courses have previously been taken, additional research core courses must be taken in order to meet the 21-hour requirement.

2 This seminar is designed to enhance success in academia and maximize the student's research experiences. The student will be required to register for at least 9 credit hours (typically 3 hours per semester following their first year in the program). In these credit hours the student will attend formal reading clubs with the advisor where he/she will be engaged in reviewing the related literature via journal articles, conducting research projects, reviews of literature, meta-analyses, etc. In addition, the student will be taught how to write successful grants and develop a successful line of research. Each semester for a graded outcome, the student will have to produce material such as a manuscript based on data acquired in the laboratory from the ideas developed in the seminar, a grant that will support the research ideas developed, or significant progress on a research-related project. Students will co-develop these graded outcomes each semester and submit them for approval to the doctoral program committee.

Exit Requirements

- Comprehensive Examination
- Dissertation

Program Related Information

Advisor

- Preliminary contact is made with a potential advisor prior to applying to the program. Prior to being admitted, a student must confirm mentorship with an advisor based on mutual interests and willingness of the advisor to take on the student.

Program of Study (must have 45 hours remaining after approval)

- The student and his/her advisor will determine the program of study, including the required courses, deficiency courses, and general area of research for the dissertation. The program of study must be completed by the end of the first year and approved by the faculty mentor and one additional faculty member from their respective school or department (considered the program committee) as well as the Doctoral Program Committee chair. After this approval, the student will submit the program of study form with course information to the Office of Graduate. Please note, no more than six independent study/ research credit hours are recommended; however, the program of study is determined by the student, faculty mentor, and an additional faculty member in the school or department.

Comprehensive Exam

- The required comprehensive exam will be taken towards the end of the student's coursework. The supervisory committee, in conjunction with the student will determine the nature of the exam; the exam could include a take-home exam followed by an oral defense, or writing an NIH-type grant followed by an oral exam. The supervisory committee will evaluate the exam. Once a student passes their comprehensive exam they are considered a doctoral candidate.

Dissertation Committee

- In the first semester of a students' third year, the student must form a dissertation committee. The student must submit the Appointment of Dissertation Committee form consisting of at least four University of Nebraska graduate faculty members, one of whom must be from outside the student's academic department/school in which the doctorate is to be granted. The chair of the dissertation committee must be a member of the graduate faculty. The outside representative must hold graduate faculty status within the NU system. The dean for Graduate Studies at UNO will appoint the committee upon recommendation of the advisor. The committee will be responsible for approving the comprehensive exam, dissertation proposal, dissertation, and its oral defense. Please note, if the potential objectives of a dissertation topic change, the dissertation committee can be altered at any time.

Dissertation Proposal Form

- Within one year of successfully completing the comprehensive exam and being admitted to candidacy, a formal research proposal for the dissertation topic should be presented to the supervisory committee. The format of the proposal is subject to approval by the advisor and the supervisory committee. The proposal could include a formal written proposal with an oral defense or oral presentation of the proposed research project.

Dissertation

- After successfully completing the comprehensive exam and being admitted to degree candidacy, the student must register for at least one credit hour of dissertation for each semester until completion of the degree. A minimum of 15 hours of dissertation credit must be completed within the course of the degree.
- It is expected that the dissertation will result in manuscript submissions in referred journals in the discipline.
- Upon completion of the dissertation, an updated CV and the program exit survey must be submitted to the Doctoral Program Committee chair.

Residency

- The residency will be reasonably compact, continuous, and coherent, and a substantial portion done at and under close supervision of the university. Most of the students in the program will be full-time and continuously enrolled.

Concentrations

Biomechanics Concentration

Code	Title	Credits
Required Courses		**15**
BMKI 9451	ADVANCED BIOMECHANICS	
BMKI 9460	ADVANCED BIOMECHANICS II	
BMKI 9401	MOTOR LEARNING I	
or BMKI 9411	MOTOR CONTROL I	
or BMKI 9421	MOTOR DEVELOPMENT	
BMKI 9500	MOTOR LEARNING II	
or BMKI 9510	MOTOR CONTROL II	
or BMKI 9520	MOTOR DEVELOPMENT II	
PHYS 8455	CLASSICAL MECHANICS	
Electives		
Select 9 hours from the following:		9
BMCH 8106	BIOINSPIRED ROBOTICS	
BMCH 8206	METHODS IN BIOMECHANICS I	
BMCH 8216	METHODS IN BIOMECHANICS II	
BMCH 8646	ORTHOPEDIC BIOMECHANICS	
BMKI 9101	Nonlinear Analysis for Movement Studies	
BMKI 9131	IMPLEMENTING PHYSICAL ACTIVITY IN DIVERSE POPULATIONS	
BMKI 9141	PHYSICAL ACTIVITY ASSESSMENT AND HEALTH RELATED RESEARCH	
BMKI 9201	MATLAB FOR MOVEMENT SCIENCES	
BMKI 9221	METHODS IN CARDIOVASCULAR BIOMATERIALS RESEARCH	
BMKI 9300	SYSTEMATIC REVIEW AND META-ANALYSIS	
BMKI 9411	MOTOR CONTROL I	
BMKI 9421	MOTOR DEVELOPMENT	
BMKI 9510	MOTOR CONTROL II	
BMKI 9520	MOTOR DEVELOPMENT II	
BMKI 9851	EXERCISE FOR SPECIAL POPULATIONS	
BMKI 9870	MUSCULOSKELETAL SIMULATION	
BMKI 9911	INDEPENDENT STUDY IN BIOMECHANICS	
BMKI 9951	ADVANCED EXERCISE PHYSIOLOGY	
BMKI 9960	ADVANCED EXERCISE PHYSIOLOGY II	
BMKI 9691	MATHEMATICS OF BIOMECHANICAL DATA PROCESSING	
BSEN 814	Medical Imaging Systems	
BSEN 912	Advanced Diagnostic Ultrasound Imaging	
CEEN 8336	Microprocessor System Design	
CEEN 8366	Embedded Microcontroller Design	
CIP 814	Scientific Writing	
CIP 817	Applied Scientific Writing	
CSCI 8325	DATA STRUCTURES	
CSCI 8400	ADVANCED COMPUTER GRAPHICS	
CSCI 8456	PRINCIPLES OF ARTIFICIAL INTELLIGENCE	
CSCI 8476	PATTERN RECOGNITION	
CSCI/MATH 8500	NUMERICAL LINEAR ALGEBRA	
CSCI/MATH 8510	NUMERICAL DIFFERENTIAL EQUATIONS	
CSCI 8626	3D COMPUTER GRAPHICS	
CSCI 8256	HUMAN COMPUTER INTERACTION	

ELEC 8606	Labview Programming
ELEC 8636	Digital Signal Processing
ELEC 9150	Adaptive Signal Processing
ENGL 8610	PROFESSIONAL AND TECHNICAL WRITING
GCBA 812	Human Neuranatomy
GERO/PHHB 8556	HEALTH ASPECTS OF AGING
GERO 9460	SEMINAR IN AGING AND HUMAN BEHAVIOR
HEKI 8300	ANALYSIS OF RESEARCH AND LITERATURE IN HUMAN MOVEMENT
HEKI 8500	QUALITATIVE RESEARCH METHODS
HCC 8006	SPECIAL TOPICS IN IT INNOVATION
MATH 8250	PARTIAL DIFFERENTIAL EQUATIONS
MATH 8336	INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS
MATH 8356	ORDINARY DIFFERENTIAL EQUATIONS
MATH 8080	DESIGN AND ANALYSIS OF ALGORITHMS
MATH/CSCI 8306	DETERMINISTIC OPERATIONS RESEARCH MODELS
MATH/CSCI 8316	PROBABILISTIC OPERATIONS RESEARCH MODELS
MATH 8400	DYNAMICAL SYSTEMS AND CHAOS
MATH/CSCI 8766	TOPICS IN APPLIED MATHEMATICS
MATH 9110	ADVANCED TOPICS IN APPLIED MATHEMATICS
NEUR 8006	SYSTEMS NEUROSCIENCE
KINS 8086	CLINICAL EXERCISE PHYSIOLOGY
KINS 8856	CARDIOVASCULAR DISEASE PREVENTION AND REHABILITATION
PHYS 8505	ELEMENTS OF ELECTRONICS
PSYC 9010	PROSEMINAR: STATISTICAL METHODS I
PSYC 9020	PROSEMINAR: STATISTICAL METHODS II
PSYC 9070	PROSEMINAR: COGNITIVE PSYCHOLOGY
Total Credits	**24**

Motor Development and Control Concentration

Code	Title	Credits
Required Courses		**15**
BMKI 9421	MOTOR DEVELOPMENT	
BMKI 9460	ADVANCED BIOMECHANICS II	
BMKI 9500	MOTOR LEARNING II	
BMKI 9510	MOTOR CONTROL II	
BMKI 9101	Nonlinear Analysis for Movement Studies	
Electives		
Select 9 hours from the following:		9
BMCH 8206	METHODS IN BIOMECHANICS I	
BMCH 8216	METHODS IN BIOMECHANICS II	
BMKI 9141	PHYSICAL ACTIVITY ASSESSMENT AND HEALTH RELATED RESEARCH	
BMKI 9201	MATLAB FOR MOVEMENT SCIENCES	
BMKI 9221	METHODS IN CARDIOVASCULAR BIOMATERIALS RESEARCH	
BMKI 9300	SYSTEMATIC REVIEW AND META-ANALYSIS	
BMKI 9401	MOTOR LEARNING I	
BMKI 9411	MOTOR CONTROL I	
BMKI 9520	MOTOR DEVELOPMENT II	
BMKI 9451	ADVANCED BIOMECHANICS	
BMKI 9691	MATHEMATICS OF BIOMECHANICAL DATA PROCESSING	
BMKI 9810	HIGHER EDUCATION TEACHING SEMINAR	
BMKI 9820	SERVICE EXPERIENCE IN HIGHER EDUCATION	
BMKI 9851/ HEKI 8850	EXERCISE FOR SPECIAL POPULATIONS	
BMKI 9870	MUSCULOSKELETAL SIMULATION	
BMKI 9911	INDEPENDENT STUDY IN BIOMECHANICS	
BMKI 9951	ADVANCED EXERCISE PHYSIOLOGY	
BMKI 9960	ADVANCED EXERCISE PHYSIOLOGY II	
CSCI 8626	COMPUTER GRAPHICS	
CSCI 8256	HUMAN COMPUTER INTERACTION	
ELEC 8606	Labview Programming	
ELEC 8636	Digital Signal Processing	
ELEC 9150	Adaptive Signal Processing	
ENGL 8610	PROFESSIONAL AND TECHNICAL WRITING	
GERO/PHHB 8556	HEALTH ASPECTS OF AGING	
GERO 9460	SEMINAR IN AGING AND HUMAN BEHAVIOR	
NEUR 8006	SYSTEMS NEUROSCIENCE	
KINS 8086	CLINICAL EXERCISE PHYSIOLOGY	
KINS 8130/9131	IMPLEMENTING PHYSICAL ACTIVITY IN DIVERSE POPULATIONS	
KINS 8856	CARDIOVASCULAR DISEASE PREVENTION AND REHABILITATION	
KINS 8700	PSYCHOLOGY OF PHYSICAL ACTIVITY	
HEKI 8300	ANALYSIS OF RESEARCH AND LITERATURE IN HUMAN MOVEMENT	
HEKI 8500	QUALITATIVE RESEARCH METHODS	
MATH 8400	DYNAMICAL SYSTEMS AND CHAOS	
MATH 9110	ADVANCED TOPICS IN APPLIED MATHEMATICS	
PSYC 9070	PROSEMINAR: COGNITIVE PSYCHOLOGY	
PSYC 9230	PROSEMINAR: BEHAVIORAL NEUROSCIENCE	
PSYC 9560	PROSEMINAR: DEVELOPMENTAL PSYCHOLOGY	
UNMC: GCBA 812, PEDS 913, PHYT 942		
Total Credits		**24**

Physical Activity Concentration

Code	Title	Credits
Required Courses		**15**
BMKI 9131	IMPLEMENTING PHYSICAL ACTIVITY IN DIVERSE POPULATIONS	
BMKI 9141	PHYSICAL ACTIVITY ASSESSMENT AND HEALTH RELATED RESEARCH	
BMKI 9300	SYSTEMATIC REVIEW AND META-ANALYSIS	
BMKI 9701/ KINS 8700	PSYCHOLOGY OF PHYSICAL ACTIVITY	
BMKI 9050	PHYSICAL ACTIVITY EPIDEMIOLOGY	

Electives		
Select 9 hours from the following:		9
KINS 8120	CURRENT TOPICS IN WEIGHT MANAGEMENT	
KINS 8856	CARDIOVASCULAR DISEASE PREVENTION AND REHABILITATION	
BMKI 9951	ADVANCED EXERCISE PHYSIOLOGY	
BMKI 9810	HIGHER EDUCATION TEACHING SEMINAR	
BMKI 9820	SERVICE EXPERIENCE IN HIGHER EDUCATION	
BMKI 9401	MOTOR LEARNING I	
BMKI 9411	MOTOR CONTROL I	
BMKI 9421	MOTOR DEVELOPMENT	
BMKI 9451	ADVANCED BIOMECHANICS	
BMKI 9460	ADVANCED BIOMECHANICS II	
BMKI 9500	MOTOR LEARNING II	
BMKI 9510	MOTOR CONTROL II	
BMKI 9520	MOTOR DEVELOPMENT II	
KINS 8206	PLANNING WORKSITE WELLNESS PROGRAMS	
KINS 8800	RISK MANAGEMENT FOR HEALTH FITNESS PROFESSIONALS	
KINS 8910	INTERNSHIP IN EXERCISE SCIENCE	
KINS 8966	TOPICS IN SPORTS MEDICINE	
HEKI 8000	SPECIAL STUDIES	
HEKI 8100	RESEARCH PROJECT	
HEKI 8220	PROBLEMS & ISSUES IN HPER	
HEKI 8300	ANALYSIS OF RESEARCH AND LITERATURE IN HUMAN MOVEMENT	
HEKI 8500	QUALITATIVE RESEARCH METHODS	
PHHB 8450	EPIDEMIOLOGY & PREVENTION OF DISEASE	
PHHB/SOC 8706	WOMEN'S HEALTH AND ISSUES OF DIVERSITY	
PHHB 8750	PROGRAM EVALUATION AND INSTRUMENTATION	
PHHB 8850	HEALTH ASPECTS OF STRESS MANAGEMENT	
GEOG 8056	GEOGRAPHIC INFORMATION SYSTEMS I	
GEOG 8666	GEOGRAPHIC INFORMATION SYSTEMS II	
MATH/CSCI 8316	PROBABILISTIC OPERATIONS RESEARCH MODELS	
MATH 8766	TOPICS IN APPLIED MATHEMATICS	
PA 8740	HEALTH CARE POLICY	
PSYC 8646	PERSONNEL PSYCHOLOGY	
PSYC 9430	PROSEMINAR: PERSONALITY	
PSYC 9440	PROSEMINAR: SOCIAL PSYCHOLOGY	
PSYC 9500	SOCIOEMOTIONAL DEVELOPMENT	
PSYC 9550	PSYCHOSOCIAL DEVELOPMENT	
SOC 8200	HEALTH & SOCIETY	
UNMC: BIOS 823, BIOS 825, BIOS 810, EPI 821, EPI 835, EPI 845, HPRO 902, HPRO 910, HPRO 998.		
Total Credits		**24**

Physiology of Exercise Concentration

Code	Title	Credits
Required Courses		
BMKI 9951	ADVANCED EXERCISE PHYSIOLOGY	3
BMKI 9960	ADVANCED EXERCISE PHYSIOLOGY II	3
BMKI 9851	EXERCISE FOR SPECIAL POPULATIONS	3
KINS 8076	OPTIMIZING SPORTS PERFORMANCE	3
KINS 8086	CLINICAL EXERCISE PHYSIOLOGY	3
Electives		
Select 9 hours from the following:		9
BMKI 9131	IMPLEMENTING PHYSICAL ACTIVITY IN DIVERSE POPULATIONS	
BMKI 9141	PHYSICAL ACTIVITY ASSESSMENT AND HEALTH RELATED RESEARCH	
BMKI 9300	SYSTEMATIC REVIEW AND META-ANALYSIS	
BMKI 9401	MOTOR LEARNING I	
BMKI 9411	MOTOR CONTROL I	
BMKI 9421	MOTOR DEVELOPMENT	
BMKI 9451	ADVANCED BIOMECHANICS	
BMKI 9460	ADVANCED BIOMECHANICS II	
BMKI 9500	MOTOR LEARNING II	
BMKI 9510	MOTOR CONTROL II	
BMKI 9810	HIGHER EDUCATION TEACHING SEMINAR	
BMKI 9820	SERVICE EXPERIENCE IN HIGHER EDUCATION	
BIOL 8146	CELLULAR BIOLOGY	
BIOL/CHEM 8654	BIOCHEMISTRY I LABORATORY	
BIOL/CHEM 8664	BIOCHEMISTRY II LABORATORY	
KINS 8120	CURRENT TOPICS IN WEIGHT MANAGEMENT	
KINS 8206	PLANNING WORKSITE WELLNESS PROGRAMS	
KINS 8240	SPORT IN AMERICAN CULTURE	
KINS 8280	CURRICULUM IN PHYSICAL EDUCATION	
KINS 8506	BEHAVIORAL ASPECTS OF COACHING	
KINS 8800	RISK MANAGEMENT FOR HEALTH FITNESS PROFESSIONALS	
KINS 8856	CARDIOVASCULAR DISEASE PREVENTION AND REHABILITATION	
KINS 8700	PSYCHOLOGY OF PHYSICAL ACTIVITY	
KINS 8910	INTERNSHIP IN EXERCISE SCIENCE	
KINS 8966	TOPICS IN SPORTS MEDICINE	
HEKI 8000	SPECIAL STUDIES	
HEKI 8220	PROBLEMS & ISSUES IN HPER	
HEKI 8100	RESEARCH PROJECT	
HEKI 8300	ANALYSIS OF RESEARCH AND LITERATURE IN HUMAN MOVEMENT	
HEKI 8500	QUALITATIVE RESEARCH METHODS	
BIOC 827	Metabolic Regulatory Mechanisms	
Total Credits		**24**