Kinesiology and Nutrition

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Department Head: Charles Walter
Director of Graduate Studies: Giamila Fantuzzi

Program Codes:
20FS0351MS (MS in Kinesiology)
20FS1506MS (MS in Nutrition)
20FS5416PHD (PhD in Kinesiology and Nutrition)

The Department of Kinesiology and Nutrition offers programs leading to degrees at both the master's and doctoral levels.

- MS in Kinesiology (http://catalog.uic.edu/gcat/colleges-schools/applied-health-sciences/kn/ms)
- MS in Nutrition (http://catalog.uic.edu/gcat/colleges-schools/applied-health-sciences/nutr/ms)
- PhD in Kinesiology and Nutrition (http://catalog.uic.edu/gcat/colleges-schools/applied-health-sciences/knr/phd)

Kinesiology and nutrition are multidisciplinary fields that draw upon and integrate subject matter from a variety of disciplines (e.g., anatomy, biochemistry, biomechanics, motor control, molecular and cell biology, neuroscience and physiology as well as epidemiology, physical and cultural anthropology, sociology, and behavioral psychology). The master's degree programs in Kinesiology or Nutrition as a terminal degree (i.e., not leading to a PhD) are most appropriate for students who wish to apply their knowledge through practice in healthcare or industry settings and can be combined, for example, with focused course work in other fields such as public health, toxicology, business, or education. Doctoral studies are designed to lead to academic research and teaching careers or to research careers in government or industry. Students are given the opportunity to conduct research that is related to fundamental questions related to kinesiology, nutrition, and rehabilitation. In addition, there is a focus on rehabilitation issues of clinical relevance to the professions of occupational therapy and physical therapy.

Admission and Degree Requirements

- PhD in Kinesiology and Nutrition (http://catalog.uic.edu/gcat/colleges-schools/applied-health-sciences/knr/phd)

Human Nutrition Courses

HN 405. Food as Medicine: Cooking for Healing and Wellness. 1 hour.
A new disease state or medical diet will be covered each week and students will learn how to plan menus and prepare foods that are appropriate for each diet. Course Information: Prerequisite(s): HN 110.

HN 407. Writing Process in Nutrition. 2 hours.
Approaches writing as an instrument of thought and a tool of persuasion. Students will learn to effectively communicate nutrition information through writing. Course Information: May be repeated for credit. Prerequisite(s): ENGL 160 and ENGL 161; and junior standing or above; and approval of the department. Recommended Background: HN 196 and HN 110.

HN 420. Clinical Nutrition II. 2 hours.
Principles of nutrition, biochemistry, physiology, pathology, education, and psychology related to management of selected diseases (renal disease, AIDS and cancer, and pediatrics). Course Information: Prerequisite(s): HN 320; or consent of the instructor.

HN 422. Clinical Nutrition III. 2 hours.
Principles of nutrition, biochemistry, physiology, and pathology related to the management of critically ill patients. Course Information: Prerequisite(s): HN 309 and HN 420; or consent of the instructor.

HN 440. The Research Process. 3 hours.
Covers methods for reading and critiquing current scientific literature, overview of study designs used to address different types of research questions, basic overview of study design, data analysis and interpretation of results. Course Information: Prerequisite(s): HN 320.

HN 455. Supervised Practice II. 1-11 hours.
An advanced supervised practicum in a professional setting to prepare for entry-level dietetics practice. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 15 hours. Prerequisite(s): Grade of C or better in HN 420 and senior standing or above; and approval of the department.

HN 480. Field Study. 2 hours.
Provides practical experience to develop/strengthen the student's knowledge and skills in an area of nutrition practice. Course Information: Prerequisite(s): HN 410; or consent of the instructor. Class Schedule Information: To be properly registered, students must enroll in one Clinical Practice and one Conference.

HN 503. Advanced Pathophysiology of Chronic Diseases. 3 hours.
Focuses on an in-depth evaluation of the most important mechanisms of pathogenesis, with an emphasis on chronic conditions with a nutritional component. Course Information: Prerequisite(s): KN 251 and KN 252. Recommended background: HN 318.

HN 510. Nutrition - Physiological Aspects. 3 hours.
A thorough discussion of the absorption, transport, and metabolism of macronutrients, plus factors affecting these processes. Treats in an integrated fashion how various organs participate. Course Information: Prerequisite(s): HN 410 and PHYB 341 or the equivalent, or consent of the instructor.

HN 516. Advanced Vitamins and Minerals. 3 hours.
A critical analysis of current research in the areas of vitamin and mineral requirements in human nutrition; nutrient interactions; and interrelationships of vitamins and minerals within various disease states. Course Information: Prerequisite(s): HN 309; and HN 440; or consent of the instructor.
HN 530. Research Methods in Human Nutrition. 3 hours.
Research designs in human nutrition; conceptual issues in clinical and population studies; problems in collection and analysis of dietary, behavioral, and self-reported data. Course Information: Prerequisite(s): AHS 510; or consent of the instructor.

HN 532. Evaluation of Nutritional Status. 3 hours.
Community and clinical considerations in nutrition status surveillance and monitoring systems; characterization in the collection, standards and reference population development. Course Information: Prerequisite(s): HN 410; or consent of the instructor.

HN 535. Nutrition and Human Performance. 2 hours.
Nutrition which impacts on human performance; impaired performance due to nutritional problems; aspects relevant to the professional athlete. Course Information: Same as KN 535. Prerequisite(s): HN 410; and PHYB 341 or KN 352; or consent of the instructor.

HN 541. Research on Clinical Nutrition Problems. 2 hours.
Development and conduct of research on clinical nutrition problems, patient outcomes, or nutrition or food service delivery systems within a hospital or ambulatory care setting. Course Information: Prerequisite(s): Consent of the instructor.

HN 550. Quantitative Methods in Nutritional and Epidemiological Studies. 3 hours.
Address methodological issues of nutritional/epidemiologic studies; discuss concepts, principles, study designs, statistical methods, & specific issues such as measurement error/remedies, energy adjustment; practice data management/analysis. Course Information: Extensive computer use required. Prerequisite(s): HN 200 and BSTT 400 and 410 and EPID 400; or consent of the instructor.

HN 560. Advanced Topics in Public Health Nutrition: Development and Evaluation of Community-Based Nutrition. 3 hours.
Focuses on understanding the role and application of both theory and empirical data in the development and evaluation of community-based nutrition interventions. Course Information: Field work required. Prerequisite(s): HN 413 or consent of the instructor.

HN 570. Advances in Clinical Nutrition I. 2 hours.
Selected topics in clinical nutrition, emphasizing current theory, research and practice in such areas as cardiovascular disease, obesity, diabetes and iatrogenic malnutrition. Course Information: Prerequisite(s): HN 422; or consent of the instructor.

HN 580. Advanced Field Practicum. 2 hours.
Advanced practical experience in a specialized area of human nutrition and dietetics. The practicum may be carried out in a clinical setting, business, industry or government agency. Course Information: Prerequisite(s): HN 410; or consent of the instructor.

HN 581. Dietetics/Nutrition Instructional Practicum. 2 hours.
Teaching practicum in clinical dietetics and/or nutrition. Course Information: Prerequisite(s): HN 201 and HN 410 and HN 570 or the equivalent, or consent of the instructor.

HN 594. Special Topics in Human Nutrition. 1-4 hours.
Advanced course dealing with selected topics. Topics vary from year to year and may include drug/nutrient interaction, protein metabolism, nutrition and behavior, nutrition and exercise. Course Information: May be repeated. Prerequisite(s): HN 410; or consent of the instructor.

HN 595. Seminar in Human Nutrition. 1 hour.
Topics of current interest in human nutrition. Includes discussions of current journal articles and important new developments in the specific disciplines. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated with approval. Approval to repeat course granted by the department. Prerequisite(s): HN 410; or consent of the instructor.

HN 596. Independent Study in Human Nutrition. 1-4 hours.
Study in selected areas of human nutrition is carried out under the direction of a faculty member. Modes of investigation are determined by the nature of the problem selected. Course Information: May be repeated. Students may register in more than one section per term. Prerequisite(s): Admission to the human nutrition graduate program and consent of the instructor.

HN 597. Project Research. 1-4 hours.
For graduate students who wish to pursue a project other than thesis research. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 4 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

HN 598. Research in Human Nutrition. 0-16 hours.
Independent research in one area of human nutrition. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the instructor.

HN 599. Ph.D. Thesis Research. 0-16 hours.
Independent dissertation research by the student, under the guidance of the advisor. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Consent of the faculty adviser.

Kinesiology Courses

KN 400. Entrepreneurship for Applied Health Professionals. 3 hours.
Relates the theory, principles and practices applied in entrepreneurial start-up settings in healthcare and human performance professions. Course Information: Prerequisite(s): Junior standing or above.

KN 401. Clinical Skills in Kinesiology. 3 hours.
Builds, reviews, and assesses the clinical proficiencies in the areas of exercise assessment, testing, and programming; strength and conditioning training; health and nutritional coaching; and basic care of musculoskeletal injuries. Course Information: Prerequisite(s): HN 296 and KN 331 and KN 335 and KN 345. Class Schedule Information: To be properly registered, students must enroll in one Lecture-Discussion and one Laboratory.

KN 402. Worksite Health Promotion. 3 hours.
Introduces students to evidence based worksite health promotion programs at two levels 1) program design, delivery and evaluation, 2) program management so that they develop skills and capabilities for the field of worksite health promotion. Course Information: Prerequisite(s): KN 400.

KN 410. Aging and the Motor System. 3 hours.
Introduction to aging with a focus on its impact on the physical structure and function of the neural, muscular and skeletal systems; the mechanics through which the trajectory of aging can be potentially modified. Course Information: Prerequisite(s): KN 252; and junior standing or above.
KN 431. Lower Extremity Overuse Injury. 3 hours.
Critical review of the literature related to lower extremity overuse injury; current practices and research gaps in the prevention and treatment of these injuries; movement assessment and corrective exercise to prevent and care of these injuries. Course Information: Prerequisite(s): KN 261 and KN 331. Class Schedule Information: To be properly registered, students must enroll in one Lecture-Discussion and one Laboratory.

KN 435. Sport Psychology for Individual and Team Performance. 3 hours.
Analysis and application of psychological concepts related to process and outcomes of sport and exercise programs. Course Information: Prerequisite(s): KN 335.

KN 436. Health Coaching. 3 hours.
Enables students to practice and plan alternative approaches to health coaching, and to differentiate and evaluate two different health coaching approaches. Course Information: Prerequisite(s): KN 335 and senior standing or above.

KN 437. Motivational Interviewing Lab. 1 hour.
Builds on the knowledge gained in KN 436 and focuses on developing proficiency in motivational interviewing. Course Information: Prerequisite(s): KN 436.

KN 438. Exercise Adherence. 3 hours.
Exercise behavior as it relates to habitual physical activity. Encompasses health outcomes, exercise adherence factors, intervention, strategies, and exercise settings.

KN 441. Muscle Physiology. 3 hours.
Examination of skeletal muscle function during physical activity and adaptations of skeletal muscle that occur with exercise training, inactivity and aging. Course Information: Prerequisite(s): KN 352 and junior standing or above; or consent of the instructor.

KN 442. Principles of ECG Interpretation. 3 hours.
Introduction to the basic principles and interpretation of the electrocardiogram (ECG) as it relates to fitness programs involving the apparently healthy as well as cardiac rehabilitation patients. Course Information: Prerequisite(s): Grade of C or better in KN 352; and junior standing or above; or consent of the instructor. Class Schedule Information: To be properly registered, students must enroll in one Lecture/Discussion and one Laboratory.

KN 448. Modifications in Exercise Programming. 3 hours.
This course examines the criteria for exercise and fitness participation and the modifications necessary to benefit people with limiting physical conditions. Course Information: Previously listed as KN 348. Prerequisite(s): KN 345 and junior standing or above.

KN 452. Advanced Exercise Physiology. 3 hours.
Review of research in exercise physiology on topics currently addressed in the research literature. The first half of the semester will address factors affecting performance. The second half will address health and disease factors. Course Information: Prerequisite(s): KN 352; and junior standing or above and one college-level course in chemistry.

KN 460. Neuromechanical Basis of Human Movement. 3 hours.
Biomechanics of single and multi-joint systems, and its role in neural control of movement. Mechanisms of acute adaptations including warm-up, fatigue and potentiation, and chronic adaptations arising from reduced use or training. Course Information: Prerequisite(s): KN 252 and KN 361 and junior standing or above; or consent of the instructor.

KN 465. Biomechanics of the Neuromusculoskeletal Systems. 3 hours.
Introduces the non-engineering/physics student to the biomechanics of the neural, muscular and skeletal systems. The course focuses on normal structure-function of tissues and joints, injury and prevention. Course Information: Previously listed as KN 365. Prerequisite(s): KN 361 or one year of college physics; or consent of the instructor.

KN 472. Movement Neuroscience. 3 hours.
Overview of the human nervous system. Emphasis is placed on the basic functional anatomical and physiological concepts relevant to the organization and execution of movement. Course Information: Prerequisite(s): KN 251 and KN 252 and KN 352 and KN 372; and junior standing or above; or consent of the instructor.

KN 475. Movement Disorders. 3 hours.
Examines basic and applied understanding of the neural changes in motor function in disease and disorders of movement. This will include peripheral and central motor deficits. Prerequisite(s): KN 352 and KN 372; and junior standing or above.

KN 481. Workshop in Kinesiology. 1-3 hours.
Intensified study of selected activities, topics, processes or areas in kinesiology. Topic will be announced. Course Information: May be repeated if topics vary. Students may register in more than one section per term.

KN 489. Seminars in Kinesiology. 1-3 hours.
Weekly seminars devoted to research in kinesiology and related fields, followed by a one-hour discussion. Course Information: Satisfactory/ Unsatisfactory grading only. May be repeated. Prerequisite(s): Junior standing or above.

KN 493. Practicum in Undergraduate Teaching. 1-2 hours.
Peer instruction experience for undergraduate students. Course Information: May be repeated for credit. Students may register for more than one section per term. Prerequisite(s): Students must have successfully completed the course, or its equivalent, that they are teaching with a grade of B or better, in addition to obtaining consent of the instructor. Recommended Background: Junior or senior standing and an overall GPA of 3.00.

KN 494. Special Topics in Kinesiology. 1-3 hours.
Flexible course structure designed to accommodate relevant topics beyond the scope of the current course offerings, with more in-depth analysis of primary literature. Course Information: May be repeated if topics vary. Students may register in more than one section per term. Prerequisite(s): Depending on topic, specific prerequisites may be required.

KN 496. Special Projects in Kinesiology. 1-3 hours.
Independent research on special projects. Course Information: Prerequisite(s): Approval by graduate faculty member and graduate director.

KN 500. Evidence-Based Practice in Kinesiology and Nutrition. 3 hours.
Training in the research approaches pertaining to specific areas of study in kinesiology and nutrition. Emphasis is placed on accessing, evaluating and applying findings in the primary literature as critical steps in evidence-based practice.

KN 501. Current Research in Kinesiology. 1 hour.
In-depth analysis of current original research. Course Information: May be repeated to a maximum of 10 hours with approval. Approval to repeat course granted by the department. Prerequisite(s): Consent of the instructor.
KN 502. Movement Science. 4 hours.
Synthesis of the body of knowledge in kinesiology using various diseases as a teaching model. Course Information: Prerequisite(s): Consent of instructor.

KN 503. Responsible Conduct of and Ethical Decision Making in Research. 2 hours.
The conventions, standards and rules that govern the responsible conduct of basic, clinical and translational research (RCR); including the roles of regulatory agencies, ethical decision making and fostering professional behavior in research.

KN 520. Disability and Physical Activity. 3 hours.
Examination of the foundations of physical activity for persons with disabilities. Emphasis on strategies for promoting physical activity among persons with disabilities in community settings. Course Information: Same as DHD 520.

KN 523. Tissue Inflammation and Repair. 3 hours.
Mechanisms of tissue inflammation and repair in various tissues and different pathological conditions. This course will focus on current research related to factors influencing inflammation and tissue repair including the effects of exercise. Course Information: Same as PHYB 523. Prerequisite(s): Graduate standing; and consent of the instructor.

KN 527. Molecular Biology of Muscle Genes and Proteins. 2 hours.
Regulatory mechanisms which govern gene expression relevant to the function of skeletal and cardiac muscle. Course Information: Prerequisite(s): BIOS 524 and BIOS 525 and consent of instructor.

KN 528. Cellular Response to Exercise. 3 hours.
Examines cellular structure/function relationships important for acute and chronic adaptations to exercise. Emphasis on understanding cellular basis of physiological response to exercise. Course Information: Prerequisite(s): BIOS 422 or consent of the instructor.

KN 529. Exercise Genomics. 3 hours.
Molecular mechanisms by which cells adapt to increases and decreases in physical activity. Emphasis on understanding genomic, transcriptional, translational and post-translational sites of control. Course Information: Prerequisite(s): Consent of the instructor.

KN 535. Nutrition and Human Performance. 2 hours.
Nutrition which impacts on human performance; impaired performance due to nutritional problems; aspects relevant to the professional athlete. Course Information: Same as HN 535. Prerequisite(s): PHYB 341 or KN 352; or consent of the instructor.

KN 538. Race, Culture, and Health Disparities. 2-3 hours.
Focuses on developing students’ critical thinking skills as they relate to race, health disparities and engaging in culturally responsive care. Course Information: Same as DHD 528 and OT 528. Students registering for 3 hours of credit complete an immersion activity and a research paper. Prerequisite(s): Graduate standing and consent of the instructor.

KN 545. Advanced Exercise Programming and Assessment. 3 hours.
Emphasis on current recommendations for exercise prescription and assessment methods for adult populations. Diagnostic and prescriptive procedures will be delineated. Course Information: Prerequisite(s): KN 452 or consent of the instructor. Class Schedule Information: To be properly registered, students must enroll in one Laboratory-Discussion and one Lecture.

KN 552. Human Bioenergetics. 3 hours.
Examines current topics in exercise physiology including bioenergetics; fatigue; organ system support; exercise metabolism; relationships between exercise effects and outcomes; and effects of training adaptations for sport or health. Course Information: Prerequisite(s): KN 352; and one college-level course in biochemistry.

KN 570. Neural Mechanisms Underlying Motor Control. 4 hours.
Neurophysiological mechanisms that underlie the control and regulation of movement. Course Information: Prerequisite(s): Consent of the instructor.

KN 571. Biomechanics of Normal and Abnormal Movement. 3 hours.
Principles of statics and dynamics exemplified by human movements. Examination of muscle mechanics, joint forces, stability. Redundancy and intersegmental interactions in multijoint movements. Course Information: Same as PT 571. Prerequisite(s): Consent of the instructor.

KN 572. Psychology of Motor Control and Learning. 3 hours.
Advanced principles of the control and acquisition of complex, voluntary skills. Course Information: Same as PT 572. Prerequisite(s): KN 372; or consent of the instructor.

KN 573. Advanced Topics in Motor Control and Learning. 3 hours.
Contemporary theories and models in motor control and learning.

KN 574. Instrumentation for Motor Control Research. 3 hours.
Introduction to oscilloscopes, amplifiers, filters, and transducers. Origin and processing of electromyograms. Motion capture and processing techniques. Course Information: Same as PT 574. Prerequisite(s): KN 571 or PT 571.

KN 581. Exercise Leadership Field Instruction. 3 hours.
Students are assigned to fitness classes where, under the supervision of a field instructor, they prepare lessons, give instruction and administer written and physical fitness exams. Course Information: Prerequisite(s): KN 545. Class Schedule Information: To be properly registered, students must enroll in one Lecture-Discussion and one Practice.

KN 590. Seminar in Kinesiology. 1 hour.
Final experience for 40-hour MS student. Student must demonstrate ability to synthesize material obtained in program and relate it to their area of concentration. Course Information: Prerequisite(s): Approval of the department.

KN 592. Clinical Rotations in Exercise Physiology. 1-4 hours.
The clinical rotation serves as an avenue to introduce students to various experiences in clinical exercise physiology and as a precursor to a clinical internship. Field work is required. Course Information: Satisfactory/ Unsatisfactory grading only. May be repeated to a maximum of 4 hours. Prerequisite(s): Approval of the department.

KN 593. Internship in Kinesiology. 1-12 hours.
Supervised internship in a laboratory or field setting. A written report is required. Normally open only to candidates in the Applied Exercise Physiology MS area of concentration. Course Information: Satisfactory/ Unsatisfactory grading only. May be repeated to a maximum of 12 hours. Credit is not given for KN 593 if the student has credit in KN 597 or KN 588. Field work required. Prerequisite(s): Students must pass the comprehensive examination before placement at an internship site.

KN 594. Selected Topics in Kinesiology. 1-3 hours.
Topic to be announced. Analysis of selected problems and concerns in specified concentrations. Topics vary from semester to semester, depending on the needs and interests of the graduate students. Course Information: May be repeated if topics vary. Prerequisite(s): Consent of the instructor.
KN 596. Independent Research in Kinesiology. 1-4 hours.
Topics vary. Students design, implement, and analyze a research problem in their individual area of concentration under the supervision of a faculty member. Course Information: Prerequisite(s): KN 500.

KN 597. Project in Kinesiology. 0-8 hours.
Supervised practicum in laboratory or field setting in which recent research findings are applied, tested, and evaluated. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): KN 500 and consent of the advisor and director of graduate studies.

KN 598. Master’s Thesis Research. 0-16 hours.
Thesis work under the supervision of a graduate advisor. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): KN 500 and consent of the advisor and director of graduate studies.

Independent research by the student under the supervision of the thesis advisor. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated.

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For graduate students who wish to pursue a project other than thesis research. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 4 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

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Builds on the knowledge gained in KN 436 and focuses on developing proficiency in motivational interviewing. Course Information: Prerequisite(s): KN 436.

KN 438. Exercise Adherence. 3 hours.
Exercise behavior as it relates to habitual physical activity. Encompasses health outcomes, exercise adherence factors, intervention, strategies, and exercise settings.

KN 441. Muscle Physiology. 3 hours.
Examination of skeletal muscle function during physical activity and adaptations of skeletal muscle that occur with exercise training, inactivity and aging. Course Information: Prerequisite(s): KN 352 and junior standing or above; or consent of the instructor.

KN 442. Principles of ECG Interpretation. 3 hours.
Introduction to the basic principles and interpretation of the electrocardiogram (ECG) as it relates to fitness programs involving the apparently healthy as well as cardiac rehabilitation patients. Course Information: Prerequisite(s): Grade of C or better in KN 352; and junior standing or above; or consent of the instructor. Class Schedule Information: To be properly registered, students must enroll in one Lecture/Discussion and one Laboratory.
KN 448. Modifications in Exercise Programming. 3 hours.
This course examines the criteria for exercise and fitness participation and the modifications necessary to benefit people with limiting physical conditions. Course Information: Previously listed as KN 348. Prerequisite(s): KN 345 and junior standing or above.

KN 452. Advanced Exercise Physiology. 3 hours.
Review of research in exercise physiology on topics currently addressed in the research literature. The first half of the semester will address factors affecting performance. The second half will address health and disease factors. Course Information: Prerequisite(s): KN 352 and junior standing or above and one college-level course in chemistry.

KN 460. Neuromechanical Basis of Human Movement. 3 hours.
Biomechanics of single and multi-joint systems, and its role in neural control of movement. Mechanisms of acute adaptations including warm-up, fatigue and potentiation, and chronic adaptations arising from reduced use or training. Course Information: Prerequisite(s): KN 252 and KN 361 and junior standing or above; or consent of the instructor.

KN 465. Biomechanics of the Neuromusculoskeletal Systems. 3 hours.
Introduces the non-engineering/physics student to the biomechanics of the neural, muscular and skeletal systems. The course focuses on normal structure-function of tissues and joints, injury and prevention. Course Information: Previously listed as KN 365. Prerequisite(s): KN 361 or one year of college physics; or consent of the instructor.

KN 472. Movement Neuroscience. 3 hours.
Overview of the human nervous system. Emphasis is placed on the basic functional anatomical and physiological concepts relevant to the organization and execution of movement. Course Information: Prerequisite(s): KN 251 and KN 252 and KN 352 and KN 372; and junior standing or above; or consent of the instructor.

KN 475. Movement Disorders. 3 hours.
Examines basic and applied understanding of the neural changes in motor function in disease and disorders of movement. This will include peripheral and central motor deficits. Prerequisite(s): KN 352 and KN 372; and junior standing or above.

KN 481. Workshop in Kinesiology. 1-3 hours.
Intensified study of selected activities, topics, processes or areas in kinesiology. Topic will be announced. Course Information: May be repeated if topics vary. Students may register in more than one section per term.

KN 489. Seminars in Kinesiology. 1-3 hours.
Weekly seminars devoted to research in kinesiology and related fields, followed by a one-hour discussion. Course Information: Satisfactory/ Unsatisfactory grading only. May be repeated. Prerequisite(s): Junior standing or above.

KN 493. Practicum in Undergraduate Teaching. 1-2 hours.
Peer instruction experience for undergraduate students. Course Information: May be repeated for credit. Students may register for more than one section per term. Prerequisite(s): Students must have successfully completed the course, or its equivalent, that they are teaching with a grade of B or better, in addition to obtaining consent of the instructor. Recommended Background: Junior or senior standing and an overall GPA of 3.00.

KN 494. Special Topics in Kinesiology. 1-3 hours.
Flexible course structure designed to accommodate relevant topics beyond the scope of the current course offerings, with more in-depth analysis of primary literature. Course Information: May be repeated if topics vary. Students may register in more than one section per term. Prerequisite(s): Depending on topic, specific prerequisites may be required.

KN 496. Special Projects in Kinesiology. 1-3 hours.
Independent research on special projects. Course Information: Prerequisite(s): Approval by graduate faculty member and graduate director.

KN 500. Evidence-Based Practice in Kinesiology and Nutrition. 3 hours.
Training in the research approaches pertaining to specific areas of study in kinesiology and nutrition. Emphasis is placed on accessing, evaluating and applying findings in the primary literature as critical steps in evidence-based practice.

KN 501. Current Research in Kinesiology. 1 hour.
In-depth analysis of current original research. Course Information: May be repeated to a maximum of 10 hours with approval. Approval to repeat course granted by the department. Prerequisite(s): Consent of the instructor.

KN 502. Movement Science. 4 hours.
Synthesis of the body of knowledge in kinesiology using various diseases as a teaching model. Course Information: Prerequisite(s): Consent of instructor.

KN 503. Responsible Conduct of and Ethical Decision Making in Research. 2 hours.
The conventions, standards and rules that govern the responsible conduct of basic, clinical and translational research (RCR); including the roles of regulatory agencies, ethical decision making and fostering professional behavior in research.

KN 520. Disability and Physical Activity. 3 hours.
Examination of the foundations of physical activity for persons with disabilities. Emphasis on strategies for promoting physical activity among persons with disabilities in community settings. Course Information: Same as DHD 520.

KN 523. Tissue Inflammation and Repair. 3 hours.
Mechanisms of tissue inflammation and repair in various tissues and different pathological conditions. This course will focus on current research related to factors influencing inflammation and tissue repair including the effects of exercise. Course Information: Same as PHYB 523. Prerequisite(s): Graduate standing; and consent of the instructor.

KN 527. Molecular Biology of Muscle Genes and Proteins. 2 hours.
Regulatory mechanisms which govern gene expression relevant to the function of skeletal and cardiac muscle. Course Information: Prerequisite(s): BIOS 524 and BIOS 525 and consent of instructor.

KN 528. Cellular Response to Exercise. 3 hours.
Examines cellular structure/function relationships important for acute and chronic adaptations to exercise. Emphasis on understanding cellular basis of physiological response to exercise. Course Information: Prerequisite(s): BIOS 422 or consent of the instructor.

KN 529. Exercise Genomics. 3 hours.
Molecular mechanisms by which cells adapt to increases and decreases in physical activity. Emphasis on understanding genomic, transcriptional, translational and post-translational sites of control. Course Information: Prerequisite(s): Consent of the instructor.
KN 535. Nutrition and Human Performance. 2 hours.
Nutrition which impacts on human performance; impaired performance
due to nutritional problems; aspects relevant to the professional athlete.
Course Information: Same as HN 535. Prerequisite(s): PHYB 341 or KN 352; or consent of the instructor.

KN 538. Race, Culture, and Health Disparities. 2-3 hours.
Focuses on developing students’ critical thinking skills as they relate
to race, health disparities and engaging in culturally responsive care.
Course Information: Same as DHD 528 and OT 528. Students registering
for 3 hours of credit complete an immersion activity and a research paper.
Prerequisite(s): Graduate standing and consent of the instructor.

KN 545. Advanced Exercise Programming and Assessment. 3 hours.
Emphasis on current recommendations for exercise prescription and
assessment methods for adult populations. Diagnostic and prescriptive
procedures will be delineated. Course Information: Prerequisite(s): KN 452 or consent of the instructor. Class Schedule Information: To be
properly registered, students must enroll in one Laboratory-Discussion
and one Lecture.

KN 552. Human Bioenergetics. 3 hours.
Examines current topics in exercise physiology including bioenergetics;
fatigue; organ system support; exercise metabolism; relationships
between exercise effects and outcomes; and effects of training
adaptations for sport or health. Course Information: Prerequisite(s): KN 352; and one college-level course in biochemistry.

KN 570. Neural Mechanisms Underlying Motor Control. 4 hours.
Neurophysiological mechanisms that underlie the control and regulation
of movement. Course Information: Prerequisite(s): Consent of the
instructor.

KN 571. Biomechanics of Normal and Abnormal Movement. 3 hours.
Principles of statics and dynamics exemplified by human movements.
Examination of muscle mechanics, joint forces, stability. Redundancy and
intersegmental interactions in multijoint movements. Course Information: Same as PT 571. Prerequisite(s): Consent of the
instructor.

KN 572. Psychology of Motor Control and Learning. 3 hours.
Advanced principles of the control and acquisition of complex, voluntary
skills. Course Information: Same as PT 572. Prerequisite(s): KN 372; or
consent of the instructor.

KN 573. Advanced Topics in Motor Control and Learning. 3 hours.
Contemporary theories and models in motor control and learning.

KN 574. Instrumentation for Motor Control Research. 3 hours.
Introduction to oscilloscopes, amplifiers, filters, and transducers. Origin
and processing of electromyograms. Motion capture and processing
techniques. Course Information: Same as PT 574. Prerequisite(s): KN 571 or PT 571.

KN 581. Exercise Leadership Field Instruction. 3 hours.
Students are assigned to fitness classes where, under the supervision
of a field instructor, they prepare lessons, give instruction and administer
written and physical fitness exams. Course Information: Prerequisite(s):
KN 545. Class Schedule Information: To be properly registered, students
must enroll in one Lecture-Discussion and one Practice.

KN 590. Seminar in Kinesiology. 1 hour.
Final experience for 40-hour MS student. Student must demonstrate
ability to synthesize material obtained in program and relate it to their
area of concentration. Course Information: Prerequisite(s): 32 semester
hours of graduate credit and consent of major advisor.

KN 592. Clinical Rotations in Exercise Physiology. 1-4 hours.
The clinical rotation serves as an avenue to introduce students to various experiences in clinical exercise physiology and as a precursor to a clinical internship. Field work is required. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 4 hours.
Prerequisite(s): Approval of the department.

KN 593. Internship in Kinesiology. 1-12 hours.
Supervised internship in a laboratory or field setting. A written report
is required. Normally open only to candidates in the Applied Exercise
Physiology MS area of concentration. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 12 hours.
Credit is not given for KN 593 if the student has credit in KN 597 or
KN 598. Field work required. Prerequisite(s): Students must pass the
comprehensive examination before placement at an internship site.

KN 594. Selected Topics in Kinesiology. 1-3 hours.
Topic to be announced. Analysis of selected problems and concerns
in specified concentrations. Topics vary from semester to semester,
depending on the needs and interests of the graduate students. Course
Information: May be repeated if topics vary. Prerequisite(s): Consent of the
instructor.

KN 596. Independent Research in Kinesiology. 1-4 hours.
Topics vary. Students design, implement, and analyze a research
problem in their individual area of concentration under the supervision of a faculty member. Course Information: Prerequisite(s): KN 500.

KN 597. Project in Kinesiology. 0-8 hours.
Supervised practicum in laboratory or field setting in which recent
research findings are applied, tested, and evaluated. Course
Information: Satisfactory/Unsatisfactory grading only. May be repeated.
Prerequisite(s): KN 500 and consent of the advisor and director of
graduate studies.

KN 598. Master’s Thesis Research. 0-16 hours.
Thesis work under the supervision of a graduate advisor. Course
Information: Satisfactory/Unsatisfactory grading only. May be repeated.
Prerequisite(s): KN 500 and consent of the advisor and director of
graduate studies.

Independent research by the student under the supervision of the thesis
advisor. Course Information: Satisfactory/Unsatisfactory grading only.
May be repeated.