KNES - KINESIOLOGY

**KNES400 The Foundations of Public Health in Kinesiology (3 Credits)**
An investigation of the role of physical activity and inactivity in relation to health and well-being through a public health perspective. Past and current perspectives on health promotion, health education, and social policies and approaches will be examined for various populations.

**Prerequisite:** Minimum grade of C- in KNES287.
**Restriction:** Senior standing or higher; and must be in a major within the SPHL-Kinesiology department.
**Credit Only Granted for:** KNES400 or KNES498A.
**Formerly:** KNES498A.

**KNES402 Biomechanics of Sport (3 Credits)**
Mechanical determinants influencing sport techniques. A quantitative, scientific basis for sport analysis with emphasis on the application to numerous sport activities. Evaluation and quantification of the filmed performance of athletes.

**Prerequisite:** Minimum grade of C- in KNES300.
**Restriction:** Must be in a major within the SPHL-Kinesiology department; and must have earned a minimum of 75 credits.

**KNES405 Principles & Techniques of Manual Muscle Testing (3 Credits)**
It is critical for sports medicine and sport performance specialists to understand the location and inter-relationships of the structures of the body that impact human movement. Thus, the primary purpose of this course is to facilitate an in-depth, understanding of the muscles of the body. Specifically, students will learn the origins, insertions, primary and secondary functions, as well as nervous innervations of the major muscle groups of the body. In addition, students will develop palpation skills and learn to grade the function of each muscle through manual muscle testing techniques. These skills form the foundation for assessing functional movement as well as performing safe and effective manual therapy techniques. Thus, while the focus of the class will be to develop sound, introductory palpation and manual muscle testing skills, basic principles of functional movement and manual therapy will also be addressed through hands-on application as well as case study.

**Prerequisite:** Minimum grade of C- in BSCI201 and BSCI202; and 1 course with a minimum grade of C- from Kinesiology core courses at the 300-level or higher.
**Additional Information:** This course emphasizes hands-on application of skills. Course participation is critical.

**KNES440 Psychology of Athletic Performance (3 Credits)**
Examines the psychological factors, mechanisms, and processes in athletic performance. Utilizes a social psychological approach to focus on the study and review of individual performance in both the interpersonal and social context.

**Prerequisite:** Minimum grade of C- in KNES350.
**Restriction:** Must have earned a minimum of 75 credits.
**Credit Only Granted for:** KNES498P, KNES689Z, or KNES440.

**KNES442 Psychology of Exercise and Health (3 Credits)**
Examines the antecedents and consequences of exercise behavior. Explores motivation, attitude, control, socialization. Proposes intervention strategies at the individual, organizational and societal levels.

**Prerequisite:** Minimum grade of C- in KNES350.
**Restriction:** Must be in a major within the SPHL-Kinesiology department; and must have earned a minimum of 75 credits.
**Credit Only Granted for:** KNES442 or KNES4980.
**Formerly:** KNES4980.

**KNES445 Exercise and Brain Health (3 Credits)**
Examines the evidence for exercise to affect brain function and brain health in children, in adults, and in old age. Covers the adaptations to acute and chronic exercise within brain networks related to emotion, stress reactivity, memory, and executive function, and the effectiveness of physical activity and exercise as treatments for depression, anxiety disorders, and cognitive impairment.

**Prerequisite:** Minimum grade of C- in KNES350.
**Restriction:** Must be in a major within the SPHL-Kinesiology department; and must have earned a minimum of 75 credits.
**Credit Only Granted for:** KNES498C or KNES445.
**Formerly:** KNES498C.

**KNES451 Children and Sport: A Psychosocial Perspective (3 Credits)**
Examination of youth sports from a psychosocial perspective, including the impact of highly structured sports on young athletes and the complex social network of coaches, parents and peers.

**Prerequisite:** Minimum grade of C- in KNES350.
**Restriction:** Must be in a major within the SPHL-Kinesiology department; and must have earned a minimum of 75 credits.

**KNES455 Scientific Bases of Athletic Conditioning (3 Credits)**
An examination of physical fitness/athletic conditioning programs stressing the practical application of exercise physiology theory for enhancing athletic performance. Cardiovascular considerations, strength and power development, nutrition, speed, muscular endurance, environmental considerations and ergogenic aids.

**Prerequisite:** Minimum grade of C- in KNES306.
**Restriction:** Must be in a major within the SPHL-Kinesiology department; and must have earned a minimum of 75 credits.

**KNES457 Managing Youth Programs: Educational, Fitness and Sport (3 Credits)**
An examination of the basic functions involved in managing physical education, fitness, and youth sports programs. Focus on leadership skills, organizational management, and techniques for applying learned skills in a variety of organizational settings that serve the nation's youth.

**Prerequisite:** Minimum grade of C- in KNES350 and KNES370.
**Restriction:** Must be in a major within the SPHL-Kinesiology department; and must have earned a minimum of 75 credits.
**Credit Only Granted for:** KNES457 or KNES498Y.

**KNES460 Physiology of Aging and the Impact of Physical Activity (3 Credits)**
Biological processes in healthy individuals and those with chronic disease, the effects of acute exercise and exercise training on the physiological decline that occurs in humans, and the role that regular physical activity plays in enhancing the quality of life and activities of daily living in individuals.

**Prerequisite:** 1 course with a minimum grade of C- from (KNES320, KNES360).
**Restriction:** Must be in one of the following programs (Kinesiology; Public Health Science); and must have earned a minimum of 75 credits.
**Credit Only Granted for:** KNES457 or KNES498Y.
KNES461 Exercise and Body Composition (3 Credits)
An in-depth overview on how body composition is measured, what it is composed of, and the physiological and biochemical signals that change it. The effects of acute and chronic exercise on food storage, breakdown, and use as an energy source, is the major focus. This information is applied to important issues in public health and athletic performance.
Prerequisite: 1 course with a minimum grade of C- from (KNES320, KNES360).
Restriction: Must be in one of the following programs (Kinesiology; Public Health Science); and must have earned a minimum of 75 credits.

KNES462 Neural Basis of Human Movement (3 Credits)
An introduction to the neural substrates which underlie postural and volitional movement. Neuroanatomical and neurophysiological basis of motor functioning; past and present conceptualizations of motor control and coordination; movement disorders; and maturation of the neuromuscular system.
Prerequisite: Minimum grade of C- in BSCI201, BSCI202, and KNES385; or permission of SPHL-Kinesiology department.
Restriction: Must have earned a minimum of 75 credits.

KNES463 Principles and Methods of Physical Activity Interventions (3 Credits)
Understanding of the planning, implementation, and evaluation of physical activity interventions. Intervention methods and practical strategies to formulate well-conceived physical activity interventions across a variety of settings and participant populations.
Prerequisite: Minimum grade of C- in KNES350 and KNES360.
Restriction: Must have earned a minimum of 75 credits.
Credit Only Granted for: KNES463 or KNES498G.

KNES464 Exercise Metabolism: Role in Health and Disease (3 Credits)
Examines the role of metabolism in kinesiology, especially as it relates to physical inactivity, health and disease. Includes bioenergetics, substrate utilization, cell signaling, and metabolic gene expression and their impact on chronic health conditions or disease.
Prerequisite: Minimum grade of C- in KNES360.
Restriction: Must have earned a minimum of 75 credits.
Credit Only Granted for: KNES464 or KNES498L.

KNES465 Physical Activity and Disease Prevention and Treatment (3 Credits)
Critically examines the scientific evidence that supports the use of physical activity to prevent and treat age-related diseases, including cardiovascular disease, diabetes, abnormal lipoprotein-lipid levels, hypertension, obesity, osteoporosis and cancer.
Prerequisite: 1 course with a minimum grade of C- from (KNES320, KNES360).
Restriction: Must have earned a minimum of 75 credits.
Credit Only Granted for: KNES465 or KNES498A.

KNES466 Graded Exercise Testing (3 Credits)
Functional and diagnostic examination of the cardiovascular responses to graded exercise testing. Emphasis on electrophysiology, mechanisms of arrhythmias, normal electrical activation of the heart, axis termination and the normal 12-lead electrocardiogram.
Prerequisite: Minimum grade of C- in KNES360.
Restriction: Must be in a major within the SPHL-Kinesiology department; and must have earned a minimum of 75 credits.

KNES467 Genetics in Physical Activity and Sport (3 Credits)
Dedicated to understanding the role of genetics in kinesiology, especially within the contexts of physical activity and sport. Specific genes and phenotypes will be explored.
Prerequisite: Minimum grade of C- in KNES360. And must be concurrently enrolled in STAT100 or have completed STAT100 with a minimum grade of C-; or students who have taken courses with comparable content may contact the department.
Restriction: Must have earned a minimum of 75 credits.
Credit Only Granted for: KNES467 or KNES498Q.

KNES476 Honors Thesis Proposal (3 Credits)
Development of honors thesis proposal based on preliminary research and literature review. Presentation of formal proposal to the thesis committee and fellow honors students.
Corequisite: KNES478.
Restriction: Must be a KNES Honors student; and senior standing.
Credit Only Granted for: KNES476 or KNES498R.

KNES477 Honors Thesis (3 Credits)
Adviseement will be on the individual basis. Thesis must be defended in the honors seminar.
Prerequisite: KNES476.
Corequisite: KNES478.
Restriction: Must be a KNES Honors student; and senior standing.
Credit Only Granted for: KNES399 or KNES477.

KNES478 Honors Seminar (1-3 Credits)
Guided discussion of research topics of current interest.
Restriction: Must be a KNES Honors student; and junior standing or higher.
Repeatable to: 4 credits if content differs.
Credit Only Granted for: KNES398 or KNES478.

KNES482 Socio-behavioral Aspects of Human Movement (3 Credits)
Derivation, formulation, and application of research in the socio-behavioral aspects of human movement.
Prerequisite: KNES293, KNES350, and KNES287.

KNES483 Sport Marketing and Media (3 Credits)
Industry practices in sport marketing and media. Marketing strategies and consumer behavior in different sport contexts. Critical examination of selected social and economic issues related to the buying and selling of sport.
Prerequisite: Minimum grade of C- in KNES287.
Recommended: KNES355.
Restriction: Must be in a major within the SPHL-Kinesiology department; and must have earned a minimum of 75 credits.

KNES484 Sporting Hollywood (3 Credits)
Popular representations of sport within the film media related to wider social discourses on bodies and the politics of various categories of subjectivity (gender, sex, race, class and nationality).
Prerequisite: Minimum grade of C- in KNES287 and KNES293.
Restriction: Must be in a major within the SPHL-Kinesiology department; and must have earned a minimum of 75 credits.
Credit Only Granted for: KNES484 and KNES498N.

KNES485 Sport and Globalization (3 Credits)
Examination of sport culture from a global perspective; focuses on theorizing the similarities and differences between various national sporting cultures.
Prerequisite: Minimum grade of C- in KNES287.
Restriction: Must be in a major within the SPHL-Kinesiology department; and must have earned a minimum of 75 credits.
KNES487 Women, Sports and Culture (3 Credits)
A study of the historical barriers to women's participation in physical activity, efforts to dismantle those barriers, and the differentiation that exists in women's sport and physical culture today. Exploration of the historical and contemporary factors involving female athletes in U.S. culture.
**Prerequisite:** Minimum grade of C- in KNES287.
**Restriction:** Must be in a major within the SPHL-Kinesiology department; and must have earned a minimum of 75 credits.
**Credit Only Granted for:** KNES498E or KNES487.

KNES497 Kinesiology Senior Seminar (3 Credits)
Discussions of contemporary issues vital to the discipline, critiques of research in the student's area/areas of special interest, completion of a major project where the student will be asked to demonstrate the ability to carry out investigative processes in problem solving and critical writing under faculty direction.
**Prerequisite:** A professional writing course with a minimum grade of C-; and must have completed 6 KNES core courses and 2 KNES option courses, all with a C- or higher; and must have completed STAT100 with a C- or better.
**Restriction:** Senior standing or higher; and must be in Kinesiology program; and permission of department.

KNES498 Special Topics in Kinesiology (3 Credits)
Topics of special interest in areas not covered by regularly scheduled courses.
**Prerequisite:** Permission of SPHL-Kinesiology department.
**Repeatable to:** 99 credits if content differs.

KNES600 Kinesiology in Public Health (3 Credits)
A broad introduction to public health within the context of the discipline of kinesiology, focusing on furthering the understanding of the ways kinesiology contributes toward achieving the goals of public health.

KNES601 Epidemiology of Physical Activity (3 Credits)
An exploration of basic epidemiological study design, methods, and health outcomes in the field of physical activity.
**Prerequisite:** KNES600; and must have completed an undergraduate statistics course (e.g., STAT100 or equivalent).

KNES602 Physical Activity Program Planning and Evaluation (3 Credits)
An in-depth analysis of the planning, implementation, and evaluation of physical activity interventions and programs intended to achieve physical activity and public health goals.
**Recommended:** KNES600.

KNES603 Mixed Methods in Kinesiology & Public Health Research (3 Credits)
The purpose of this course is to expose students: (1) to some of the key issues involved in physical activity and public health related research, and (2) the process of conducting and communicating research. In addition to learning the central aspects of a range of quantitative and qualitative research methods, students will gain practice evaluating and synthesizing existing research, as well as writing a research proposal specific to a topic of their choice.
**Prerequisite:** KNES600, KNES601, and KNES602.

KNES604 Development of Posture and Locomotion (3 Credits)
Development of posture and locomotion in humans integrating the perspectives of biomechanics, neuropsychology, perception-action theory and dynamical systems.

KNES609 Research Issues in Kinesiology (1-3 Credits)
Issues, methodologies, and critical analyses of current research in Kinesiology.
**Prerequisite:** Permission of SPHL-Kinesiology department.
**Repeatable to:** 6 credits.

KNES610 Methods and Techniques of Research (3 Credits)
Studies methods and techniques of research used in Kinesiology; an analysis of examples of their use; and practice in their application to problems of interest to the student.

KNES612 Qualitative Research (3 Credits)
Theoretical frameworks and methodologies necessary to conduct qualitative research, including research designs, observation and interview methods, data analysis, and development of grounded theory.

KNES613 Theories Physical Culture (3 Credits)
Examines and assesses numerous social and cultural theories as frameworks for critically interpreting the varied institutions, ideologies, and embodiments of physical culture.
**Credit Only Granted for:** KNES613 or KNES689I.
**Formerly:** KNES689I.

KNES614 Cultural Studies and Physical Culture (3 Credits)
Discusses the political commitments, constituents, and complexities of cultural studies, and their relevance for furthering the understanding of physical culture and the project of physical cultural studies.
**Credit Only Granted for:** KNES614 or KNES689P.
**Formerly:** KNES689P.

KNES615 The Body, Culture, and Physical Activity (3 Credits)
Critically examines the social constitution and embodied experience of various empirical fields of physical culture, including sport, health, movement, exercise, recreation dance, and daily living related activities.

KNES618 Current Readings in Exercise and Applied Physiology (1 Credit)
Student-led presentations of contemporary literature in the areas of genetics, exercise science, fitness and health. Emphasis on papers describing new research findings, novel techniques, innovative methods, and emerging issues.
**Prerequisite:** KNES360; or students who have taken courses with comparable content may contact the department.
**Credit Only Granted for:** KNES618, KNES609P, or KNES609N.

KNES621 Teaching Elementary Physical Education (3 Credits)
Students will learn aspects of teaching elementary physical education including: characteristics of elementary school students, testing, grading, teaching lifetime skills, and effective teaching techniques using SHAPE America Standards.
**Restriction:** Must be enrolled in Pre-K to 12 Physical Education Master of Education program.
**Credit Only Granted for:** KNES689V or KNES621.
**Formerly:** KNES689V.

KNES622 Teaching Secondary Physical Education (3 Credits)
Students will learn aspects of teaching secondary physical education including: characteristics of secondary school students, testing, grading, teaching lifetime activities, and effective teaching techniques using SHAPE America Standards.
**Restriction:** Must be enrolled in PreK-12 Physical Education Master of Education program.
**Credit Only Granted for:** KNES689I OR KNES622.
**Formerly:** KNES689I.
KNES630 Sociology of Sport in Contemporary Perspective (3 Credits)
Studies social organization and the role of individuals and groups in sport situations: the interrelationship of sport with traditional social institutions; sport as a sub-system and its structure; and sport and social problems.

KNES645 Exercise and Brain Health (3 Credits)
Examines the evidence for exercise to affect brain function and brain health in children, in adults, and in old age. Covers the adaptations to acute and chronic exercise within brain networks related to emotion, stress reactivity, memory, and executive function, and the effectiveness of physical activity and exercise as treatments for depression, anxiety disorders, and cognitive impairment.
Prerequisite: Minimum grade of C- in KNES350; or students who have taken courses with comparable content may contact the department.
Credit Only Granted for: KNES645 or KNES689X.
Formerly: KNES689X.

KNES660 Psychology of Athletic Performances (3 Credits)
Psychological factors, mechanisms, and processes in athletic performance. The basic approach is social psychological, according to which the focus is on individual performance in the interpersonal athletic context. Intrapersonal and interpersonal factors and their effects on athletic performance. Psychology of peak performance, choking, and errors of mental control. Analysis of the general principles and types of mental training.
Prerequisite: KNES350.
Credit Only Granted for: KNES660 or KNES689Z.
Formerly: KNES689Z.

KNES662 Psychology of Exercise and Health (3 Credits)
Examines the antecedents and consequences of exercise behavior. Explores motivation, attitude, control, socialization. Proposes intervention strategies at the individual, organizational and societal levels.
Prerequisite: KNES350; or students who have taken courses with comparable content may contact the department.
Credit Only Granted for: KNES662 or KNES6890.
Formerly: KNES6890.

KNES663 History of Sport in Western Culture (3 Credits)
The history of sport in the ancient, medieval and renaissance West.

KNES670 Biomechanics Theory (3 Credits)
Theoretical basis for understanding the investigation of biomechanical aspects of the human body. Integration of subject matter from physics, engineering, anatomy, kinesiology, and physiology as it relates to the study of human motion and the body as a mechanical system.
Prerequisite: MATH121 or MATH141; or must have completed MATH221.

KNES674 Quantitative Methods in Cognitive Motor Behavior (3 Credits)
Includes basic computer programming, algorithm, and quantitative techniques for time-series data with an emphasis on, but not limited to, human movement. These topics will be taught using MATLAB, a programming language and environment for numerical computation, data processing, analysis, and visualization.
Recommended: Proficiency in Precalculus and Linear Algebra or permission of department.
Credit Only Granted for: KNES689R or KNES674.
Formerly: KNES689R.

KNES676 Multisensory Perception and Human Motor Control (3 Credits)
Overview of the major sensory inputs to human motor control and spatial orientatina including auditory, somatosensory, visual and vestibular.

KNES678 Professional Seminar for Teacher Development in Physical Education (1-3 Credits)
The spring seminar course is an extension of the fall seminar course and spring internship course. It accompanies a full time undergraduate level teaching internship and is intended to support and extend students’ field experience learning. The spring seminar course is designed to continue to provide students with the support they need to successfully meet the College of Education's Middle School Mathematics and Science programmatic requirements and the Maryland State Department of Education's Middle School Mathematics and Science Teacher Certification Requirements. These requirements include demonstrating mastery on all of the College of Education's Foundational Competencies (FCCs) and Performance Based Assessments (PBAs) and the national edTPA, InTASC, and AMLE Standards.
Restriction: By permission only for graduate students enrolled in the KNES MCERT program.
Repeatable to: 3 credits.

KNES688 Seminar in Motor Learning and Performance (3 Credits)
Discussion of research dealing with advanced topics in motor learning and skilled performance. Recent developments concerning individual differences, refractoriness, anticipation and timing, transfer, retention, and work inhibition are emphasized.
Prerequisite: KNES385 and KNES496.
Repeatable to: 6 credits.

KNES689 Special Problems in Kinesiology (1-6 Credits)
Master or doctoral candidates who desire to pursue special research problems under the direction of their advisor may register for 1-6 hours of credit under this number.

KNES691 Muscular Aspects of Exercise Physiology (3 Credits)
Skeletal muscle structure and function including muscle development, excitation-contraction coupling, muscle fiber types and fatigue, muscle biochemistry, gene expression, muscle damage and regeneration. The effects of aging and exercise training on skeletal muscle.
Prerequisite: KNES360.
Recommended: BSCI422.

KNES692 Cardiovascular Aspects of Exercise Physiology (3 Credits)
Prerequisite: KNES360.

KNES694 Metabolic Aspects of Exercise Physiology (3 Credits)
Prerequisite: KNES360.
Recommended: BCHM462 and BCHM461.

KNES695 Laboratory Techniques in Exercise Physiology (3 Credits)
Lab exercise testing techniques and interpretation. Includes graded exercise testing, VO2 max, lactate threshold, phlebotomy, exercise economy, body composition, muscle biopsy, resting metabolic rate, anaerobic power and blood flow.
Prerequisite: KNES360.
KNES711 Professional Development and Grantsmanship (3 Credits)
Enhance continued professional development through an exploration of culture, climate, expectations and mentoring in research I universities. Generate a grant application including the hypothesis, structure, specific aims, background and significance, and submission of a total grant. Grant process and product will be emphasized.
Restriction: Must be a Doctoral student; and must be in a major in SPHL-School of Public Health.
Credit Only Granted for: KNES711 or KNES789X.
Formerly: KNES789X.

KNES778 Internship in Physical Activity and Public Health (1-4 Credits)
The internship is a time-limited, supervised period of public/community health activities carried out in a health or allied health organization involved with physical activity. Students gain practical experience in areas such as program planning and implementation, program evaluation, public policy analysis, research, and management.
Prerequisite: KNES600, KNES601, and KNES602.
Repeatable to: 4 credits.
Credit Only Granted for: KNES778 or KNES785.

KNES785 Internship in Physical Activity and Public Health (3 Credits)
The internship is a time-limited, supervised period of public/community health activities carried out in a health or allied health organization involved with physical activity. Students gain practical experience in areas such as program planning and implementation, program evaluation, public policy analysis, research, and management.
Prerequisite: EPIB610, EPIB650, HLSA601, HLTH665, KNES600, KNES601, and MIEH600.
Recommended: KNES602.
Credit Only Granted for: KNES778 or KNES785.

KNES786 Capstone Project in Physical Activity and Public Health (3 Credits)
The culminating experience in which the student applies knowledge and skills learned in the MPH program to conduct independent work on a physical activity problem under the supervision of a faculty advisor.
Prerequisite: KNES600, KNES601, and KNES602.

KNES789 Advanced Projects in Kinesiology (1-3 Credits)
Advanced projects examining current problems and trends in kinesiology.
Repeatable to: 3 credits.

KNES798 Internship in Physical Education/Sports Management (1-8 Credits)
Practical application of previously acquired skills and knowledge in a sport and/or physical education setting. Emphasis on selected experiences to enhance the total academic program of the student. The internship site assignment will depend upon student's background and career goals.
Prerequisite: Permission of SPHL-Kinesiology department.
Repeatable to: 8 credits.

KNES799 Master's Thesis Research (1-6 Credits)

KNES898 Pre-Candidacy Research (1-8 Credits)

KNES899 Doctoral Dissertation Research (1-8 Credits)