

# KINESIOLOGY (KINES)

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## KINES 530: Experimental Design and Methodology in Kinesiology

3 Credits

Research techniques, including methods, research design, techniques for data collection, as applied to relevant problems in Kinesiology.

**Prerequisite:** 3-credit 400-level statistics course

## KINES 531: Issues in Athletic Training

3 Credits

Analysis of professional/academic issues related to athletic training; includes medical considerations, legal and professional developments, and current research.

## KINES 540: History of Sport: Cultural and Social Dynamics

3 Credits

This seminar explores the literature, methodologies, theoretical challenges, and research questions confronting the field. KINES 540 History of Sport: Cultural and Social Dynamics (3) The History of Sport: Social and Cultural Dynamics explores the significant literature, key methodologies, and major questions currently confronting scholars of sport and leisure. The class will survey a variety of national sporting cultures and a wide range of topics. Students will read works in major research areas in the field. They will debate arguments and issues raised in those readings. They will write critiques of their readings. Students will undertake several research expeditions. The expeditions familiarize the students with the resources available at Penn State and other libraries and archives. The research expeditions also introduce them to the scholarly tools necessary for undertaking research in the social and cultural dynamics of sport. They will also produce a primary-source based research paper on a topic that they select in consultation with the professor. This course seeks to prepare graduate students to explore the history of sport. The course also seeks to develop the basic academic skills necessary for success in scholarly endeavors. Students will read, debate, and write. Writing assignments include journal article summaries, book critiques, and a research paper. The completed research paper should serve as a platform for producing a conference presentation and/or journal publication.

## KINES 551: Seminar in Motor Control

3 Credits

The course will address contemporary theories and methods in motor control as reflected in recently published scientific papers.

## KINES 565: Neurophysiological Basis of Movement

3 Credits

The basic understanding of neurophysiological structures and mechanisms involved in the generation of human voluntary movement.

## KINES 566: Psychophysiology of Movement

3 Credits

Basic concepts and principles of psychophysiology and their application for analyses of human movements.

## KINES 567: Advanced Exercise Physiology

3 Credits

Physiological changes during exercise with emphasis on the effects of physical conditioning and training.

**Prerequisite:** BIOL 472 , EXSCI480

Cross-listed with: PHSIO 567

## KINES 575: Experimental Methods in Biomechanics and Motor Control

3 Credits

Introduces the theory and practice behind the primary experimental methods used in biomechanics and motor control. KINES 575 Experimental Methods in Biomechanics and Motor Control (3) Biomechanics and motor control share a common methodology for recording and analyzing human movement. This course is designed to introduce students to the theory and practice behind the primary experimental methods used in biomechanics and motor control. At the end of the course students should have an increased understanding of the experimental methods used in biomechanics and motor control, and experience at implementing these methods. Topics to be covered include: signal processing, electromyography, motion analysis, force measurement, anthropometry, joint kinematics in two- and three-dimensions, joint kinetics, modeling, error propagation, and scaling and dimensional analysis. Lectures will be used to introduce students to the theory behind a measurement technique. Readings will be used to provide supplementary examples of how these techniques are applied in the analysis of human movement. The techniques will be illustrated with MATLAB routines, with data sets provided so the students can experience how the data must be manipulated to provide meaningful results. Assessments will focus on students understandings of the techniques, their implementation, and interpretation of their output. The course will provide a solid foundation for students wanting to understand how the data they are reading about has been produced, and the limitations in such data. Students will also have the background required to become independent in their data collection and processing in the analysis of human movement in both biomechanics and motor control. Evaluation will include exams, class presentations and a portfolio. It is anticipated that this course will be offered every spring semester with a maximum enrollment of 15.

**Prerequisite:** 3-credit 400-level biomechanics or motor control class

## KINES 577: Cardiovascular Physiology

3 Credits

In-depth study of the heart and circulatory system with emphasis on the effects of exercise on cardiovascular function.

**Prerequisite:** KINES484

Cross-listed with: PHSIO 577

KINES 578: Physiology and Mechanical Behavior of Skeletal Tissues

3 Credits

In-depth examination of the structure, composition, and material behavior of the basic skeletal tissues, including bone, cartilage, tendon, and ligament.

**Prerequisite:** BIOL 421 , BIOL 472  
Cross-Listed

KINES 579: Advanced Biomechanics of Human Motion

3 Credits

Biomechanical foundation of human movement and injury prevention.

**Prerequisite:** KINES484 ; MATH 141 or MATH 220

KINES 588: Scientific Writing in Kinesiology

3 Credits

Instruct students in writing grant proposals, abstracts, manuscripts, and effective presentations in their respective scientific fields of study in Kinesiology. KINES 588 Scientific Writing in Kinesiology (3)  
This course is intended to assist graduate students in writing grant proposals, abstracts, and manuscripts, as well as preparing effective presentations in their respective scientific field of study within the discipline of Kinesiology. Course objectives are to: 1. Increase technical proficiency in scientific writing vice a vers a grammar, sentence structure, formatting, etc. 2. Promote the ability to write effective specific aims, hypotheses, and background statement portions of a grant proposals 3. Understand the formulaic approach to writing effective scientific abstracts and manuscripts 4. Expand the ability to prepare and present effective oral communications using a Power Point format 5. Develop an understanding and appreciation for the peer review process associated with grant proposals and manuscripts Evaluation will be based on grading of the following brief writing assignments: a manuscript abstract, the Introduction section of a manuscript, the Specific Aims page of an NIH-style grant proposal, and a set of Power Point slides for an abbreviated oral presentation. The course is to be offered every fall semester. Enrollment is limited to Kinesiology Department graduate students.

KINES 590: Colloquium

1-3 Credits/Maximum of 3

Continuing seminars which consist of a series of individual lectures by faculty, students or outside speakers.

KINES 590B: Exercise Physiology Colloquium

1 Credits/Maximum of 4

Continuing colloquia in exercise physiology which consists of individual lectures by outside speakers, students and faculty.

KINES 594: Research Topics

1-18 Credits/Maximum of 18

Supervised student activities on research projects identified on an individual or small-group basis.

KINES 596: Individual Studies

1-9 Credits/Maximum of 9

Creative projects, nonthesis research, which are supervised on an individual basis and which fall outside the scope of formal courses.

KINES 597: Special Topics

1-9 Credits/Maximum of 9

Formal courses given infrequently to explore, in depth, a comparatively narrow subject that may be topical or of special interest.

KINES 597A: \*\*SPECIAL TOPICS\*\*

1-3 Credits

KINES 600: Thesis Research

1-15 Credits/Maximum of 999

No description.

KINES 601: Ph.D. Dissertation Full-Time

0 Credits/Maximum of 999

No description.

KINES 602: Supervised Experience in College Teaching

1-3 Credits/Maximum of 6

Preparation and presentation of materials in lecture and laboratory classes under the supervision of a full time faculty member.

**Prerequisite:** appointment as a Graduate Teaching Assistant in Health and Physical Education

KINES 610: Thesis Research Off Campus

1-15 Credits/Maximum of 999

No description.

KINES 611: Ph.D. Dissertation Part-Time

0 Credits/Maximum of 999

No description.