SCHOOL OF APPLIED PHYSIOLOGY

Established in 2002
(formerly Department of Health and Performance Sciences, established 1990; and Physical Education and Recreation, established 1942)

Faculty in the School of Applied Physiology are focused on understanding the science of movement, the physiological basis of movement control, and on instruction related to the importance of maintaining sound physiological systems. Our approach to these tasks involves every biological level utilizing both basic and applied sciences. For example, attempts to understand how molecules transmit signals in skeletal muscle have a foundation in basic molecular biology and ultimately relate to the applied science of movement control. Faculty interests range from systems physiology (Chang, Cope, Kogler, Millard-Stafford, Nichols, Prilutsky, Shinohara, Sprigle, Wheaton) to the molecular/cellular levels (Balog, Burkholder, Jang). At the undergraduate-level, the School instructs all Georgia Tech students in their health and wellness requirement and offers a Minor in Physiology and a Certificate in Applied Physiology enriching students’ desire for pre-medical and allied health science (e.g., physical therapy) education. At the graduate-level, the School administers master’s and doctoral degree programs. A focused Master of Science in Prosthetics and Orthotics (MSPO) program offers cutting-edge instruction coupled with sound clinical training and a foundation in movement science. The accredited MSPO program graduated its first class in 2004. The PhD program in Applied Physiology, approved by the Board of Regents, began its first class in 2005, offering research tracks in muscle physiology, ryanodine receptor function, exercise metabolism, locomotion neuromechanics and prosthetics/orthotics. The School is unique to the Georgia Tech community but founded in interdisciplinary teaching and research fundamental to the mission of the Institute.

The Master of Science Degree Program in Prosthetics and Orthotics is accredited by the Commission on Accreditation of Allied Health Education Programs (www.caahep.org) upon the recommendation of the National Commission of Orthotic and Prosthetic Education (NCOPE). Commission on Accreditation of Allied Health Education Programs
35 East Wicker Drive, Suite 1970
Chicago, IL 60601-2208
312.553.9355

Minor
• Minor in Physiology (http://www.catalog.gatech.edu/programs/minor-physiology)

Master’s Degree
• Master of Science in Prosthetics and Orthotics (http://www.catalog.gatech.edu/programs/prosthetics-orthotics-ms)

Doctoral Degrees
• Doctor of Philosophy with a Major in Applied Physiology (http://www.catalog.gatech.edu/programs/applied-physiology-phd)
• Doctor of Philosophy with a Major in Quantitative BioSciences (http://www.catalog.gatech.edu/programs/quantitative-biosciences-phd)

APPH 1040. Scientific Foundations of Health. 2 Credit Hours.
Students will learn how genetics, the environment and human behavior influence well-being. Topics include health fitness, immunity, nutrition, stress management and chronic disease prevention. Credit not allowed for both APPH 1040 and APPH 1050 or APPH 1040 or HPS 1040.

APPH 1050. The Science of Physical Activity and Health. 2 Credit Hours.
Students will learn the importance of health fitness, good nutrition, stress management and chronic disease prevention. Activity portion of course will focus on training to improve fitness. Credit not allowed for both APPH 1050 and HPS 1040 or APPH 1050 or APPH 1040.

APPH 11XX. Wellness Requirement. 1-21 Credit Hours.

APPH 1XXX. Applied Physiology electi. 1-21 Credit Hours.

APPH 2500. Introduction to Sport Science. 3 Credit Hours.
Students will apply scientific principles to human performance related to sport and movement across an array of topics (e.g., rehabilitation, exercise physiology, locomotion biomechanics, prosthetics).

APPH 2698. Undergraduate Research Assistantship. 1-12 Credit Hours.
Independent research conducted under the guidance of a faculty member.

APPH 2699. Undergraduate Research. 1-12 Credit Hours.
Independent research conducted under the guidance of a faculty member.

APPH 2XXX. Applied Physiology electi. 1-21 Credit Hours.

APPH 3000. Survey of Medicine. 3 Credit Hours.
Content focuses on scientific, social, and cultural aspects of illness, how perceptions and behavior influence disease concept and fundamental aspects of medical diagnosis and treatment.

APPH 3300. Health Promotion. 3 Credit Hours.
Through small group discussions and lectures, this class examines contemporary health issues facing college students and the theory and skill required to conduct health promotion activities.

APPH 3500. Nutrition and Health. 2 Credit Hours.
Study of human nutrition as an applied science. Nutrition physiology: metabolism, energy, production, biochemical aspect, role of nutrients, weight control mechanisms, and preventative nutrition in health management will be covered.

APPH 3751. Human Anatomy and Physiology. 3 Credit Hours.
The study of human anatomy and fundamental physiological mechanisms with concentration in skeletal, muscular, nervous, circulatory, respiratory, digestive, urinary, endocrine, and reproductive systems. Crosslisted with BIOL 3751.

APPH 3753. Fundamentals of Anatomy. 3 Credit Hours.
Detailed studies of human body structures using a regional and systems approach. Emphasis is placed on structural relationships and the integration of body systems.

APPH 3754. Laboratory in Human Anatomy. 1 Credit Hour.
A detailed hands-on study of human structure using high resolution models, specialized specimens and dissection of selected mammalian organs and tissues.

APPH 3755. Human Physiology. 3 Credit Hours.
Students will explore the function and adaptation of the human body emphasizing neuromuscular, cardio-respiratory, gastrointestinal, endocrine, and urinary systems to maintain homeostasis and human health.
APPH 3756. Laboratory in Human Physiology. 1 Credit Hour. 
A laboratory application of concepts in Physiology, providing hands-on experience focusing primarily on non-invasive human experiments supplemented with vitro tissues experiments.

APPH 3801. Special Topics. 1 Credit Hour. 
Topics of current interest in applied physiology.

APPH 3802. Special Topics. 2 Credit Hours. 
Topics of current interest in applied physiology.

APPH 3803. Special Topics. 3 Credit Hours. 
Topics of current interest in applied physiology.

APPH 3804. Special Topics. 4 Credit Hours. 
Topics of current interest in applied physiology.

APPH 3831. Special Topics. 1 Credit Hour. 
Topics of current interest in applied physiology.

APPH 3832. Special Topics. 2 Credit Hours. 
Topics of current interest in applied physiology.

APPH 3833. Special Topics. 3 Credit Hours. 
Topics of current interest in applied physiology.

APPH 3834. Special Topics. 4 Credit Hours. 
Topics of current interest in applied physiology.

APPH 3901. Special Problems. 1-21 Credit Hours. 
Individual studies in applied physiology.

APPH 3902. Special Problems. 1-21 Credit Hours. 
Individual studies in applied physiology.

APPH 3903. Special Problems. 1-21 Credit Hours. 
Individual studies in applied physiology.

APPH 3904. Special Problems. 1-21 Credit Hours. 
Individual studies in applied physiology.

APPH 4100. Exercise Physiology. 3 Credit Hours. 
Physiology of human movement with emphasis on metabolic, cardiorespiratory, and musculoskeletal aspects; associated topics include body composition, thermoregulation, and ergogenic aids.

APPH 4200. Kinesiological Basis of Human Movement. 3 Credit Hours.

APPH 4238. Ion Channel Structure, Function and Regulation. 3 Credit Hours.

APPH 4200. Kinesiological Basis of Human Movement. 3 Credit Hours. 
We will examine the basic biophysical properties, structure-function relationships, physiological regulation, pathology and pharmacological manipulation of ion channels with heavy reliance on recent literature.

APPH 4400. Human Neuroanatomy. 3 Credit Hours. 
The purpose of this course is to learn the anatomical makeup of the human nervous system. In this course we will closely examine details of central and peripheral neuranatomy with links to function. As well, comparisons with non-human vertebrate neuroanatomy will be made. Credit not allowed for both APPH 4400 and APPH 6400.

APPH 4600. Muscle Structure and Plasticity. 3 Credit Hours. 
To provide an in-depth understanding of the biological processes underlying skeletal muscle structure and function.

APPH 4651. Human Anatomy. 4 Credit Hours. 
The study of human system anatomy involving cadaver dissection, lectures and practical exams. The human muscular, nervous, skeletal and cardiorespiratory systems will be emphasized.

APPH 4698. Undergraduate Research Assistantship. 1-12 Credit Hours. 
Independent research conducted under the guidance of a faculty member.

APPH 4699. Undergraduate Research. 1-12 Credit Hours. 
Independent research under the guidance of a faculty member.

APPH 4801. Special Topics. 1 Credit Hour. 
Topics of current interest in applied physiology.

APPH 4802. Special Topics. 2 Credit Hours. 
Topics of current interest in applied physiology.

APPH 4803. Special Topics. 3 Credit Hours. 
Topics of current interest in applied physiology.

APPH 4804. Special Topics. 4 Credit Hours. 
Topics of current interest in applied physiology.

APPH 4831. Special Topics. 1 Credit Hour. 
Topics of current interest in applied physiology.

APPH 4832. Special Topics. 2 Credit Hours. 
Topics of current interest in applied physiology.

APPH 4833. Special Topics. 3 Credit Hours. 
Topics of current interest in applied physiology.

APPH 4834. Special Topics. 4 Credit Hours. 
Topics of current interest in applied physiology.

APPH 6202. Clinical Gait Analysis. 3 Credit Hours. 
Analysis of normal and pathological human locomotion. Study of theory and instrumentation for measurement of temporal and spatial kinematics and kinetics, electromyography, and plantar pressure.

APPH 6203. Biomechanics and Kinesiology in Prosthetics and Orthotics. 2 Credit Hours. 
Mechanics of human movement applied to the study of artificial limbs and braces. Emphasis on neuromuscular control, Newtonian mechanics, kinematics and kinetics.

APPH 6209. Clinical Pathology. 2 Credit Hours. 
Systems level overview of human pathology with emphasis on the effect of disease on human movement and neuromechanical function.

APPH 6211. Systems Physiology I: Cellular Mechanisms of Plasticity. 3 Credit Hours. 
The course will focus on adaptations of skeletal, muscular, and neural systems at the cellular level.

APPH 6212. Systems Physiology II: Physiology of Neuromotor Tissues. 3 Credit Hours. 
The course will focus on function and adaptations of skeletal, muscular, and neural systems. Interactions among the various systems and their plasticity will be emphasized.

APPH 6213. Systems Physiology III: Integrated Systems and Adaptation. 3 Credit Hours. 
The course will focus on integrative mechanism impacting motor system performance. Interactions among the various systems and their plasticity will be emphasized.

APPH 6214. Laboratory Rotations in Prosthetics and Orthotics. 2 Credit Hours. 
This course will provide the opportunity for students in individual laboratories to support their graduate training in prosthetics and orthotics.

APPH 6215. Studies in Responsible Conduct of Research in Prosthetics and Orthotics. 3 Credit Hours. 
This course will cover areas related to research ethics, the responsible use of animal and human models and collaborative research issues in prosthetics and orthotics.
APPH 6216. Studies in Rehabilitation Research: Prosthetics and Orthotics. 1 Credit Hour.
This course will provide students in the PhD Training Program in Prosthetics and Orthotics to study issues in Rehabilitation Medicine.

APPH 6223. CAD/CAM in Prosthetics and Orthotics Laboratory. 1 Credit Hour.
Theoretical and practical analysis of the application of computer-aided design and manufacturing to prosthetics and orthotics. Includes methods of digitization and multiple manufacturing processes.

APPH 6225. Biostatistics. 3 Credit Hours.
Introductory statistical principles and methods of experimental design, sampling, power estimation, and hypothesis testing using ANOVA and regression.

APPH 6230. Exercise Metabolism. 3 Credit Hours.
The course will focus on the biochemical pathways that provide fuel for the human body during rest and various levels of physical activity.

APPH 6231. Biomechanical Aspects of Human Motor Control. 3 Credit Hours.
The course will examine selected motor control problems that the nervous system faces in the process of managing this mechanical complexity.

APPH 6232. Locomotion Neuromechanics. 3 Credit Hours.
This is a course that will introduce topics in biomechanical and neural aspects of the control of limb locomotion and movement.

APPH 6233. The Aging Movement Control System. 3 Credit Hours.
The aim of this course is to review research literature dealing with the effects of advances in age on the CNS and motor performance.

APPH 6234. Physical Activity as a Human Behavior. 3 Credit Hours.
Focus is on understanding physical activity as a behavior using health behavior change models. An interdisciplinary perspective integrating research from the fields of epidemiology, physiology, and psychology.

APPH 6235. Mechanics and Pathomechanics of Movement Control. 3 Credit Hours.
This course is designed to understand the potential effects of selected disorders of the neuromuscular system on movement control.

APPH 6236. Neuromuscular Physiology. 3 Credit Hours.
This course discusses the application of current experimental techniques in human studies in vivo.

APPH 6237. Methods of Human Neuroimaging. 3 Credit Hours.
The purpose of the course is to introduce various methods of functional neuroimaging in humans.

APPH 6238. Ion Channel Structure, Function and Regulation. 3 Credit Hours.
This course will examine the structure, function and regulation of ion channels from both excitable and non-excitable cells.

APPH 6239. Movement Disorders. 3 Credit Hours.
This course serves as an introduction to the clinical and research aspects of movement disorders.

APPH 6400. Human Neuroanatomy. 3 Credit Hours.
The purpose of this course is to learn the anatomical makeup of the human nervous system. In this course, we will closely examine details of central and peripheral neuroanatomy with links to function. As well, comparisons with non-human vertebrate neuroanatomy will be made.

APPH 6500. Classics in Neuroscience. 1 Credit Hour.
The purpose of this seminar is to learn and explore the history of neuroscience from a perspective of reading classic papers that have evolved.

APPH 6600. Muscle Structure and Plasticity. 3 Credit Hours.
Covers the biological processes underlying skeletal muscle structure and function, as well as rigorous mathematical models of those processes.

APPH 6651. Human Anatomy. 4 Credit Hours.
The study of human system anatomy involving cadaver dissection, lectures and practical exams. The human muscular, nervous, skeletal and cardiorespiratory systems will be emphasized.

APPH 6710. Ethics of Biotechnology and Bioengineering Research. 3 Credit Hours.
This course examines the ethics of biotechnological research, including issues in the realm of research ethics, bioethics, and healthcare robotics.

APPH 6746. Rehabilitation Engineering. 3 Credit Hours.
Students will participate in rehabilitation engineering as practiced in the assistive technology industry. Credit not allowed for both APPH 6746 and ME 6746.

APPH 6895. Lower Limb Orthotics I. 3 Credit Hours.
This course is the first part of a two course series and sets the essential elements of theory, technical design and patient management.

APPH 6896. Lower Limb Orthotics II. 4 Credit Hours.
This course is the second in a two part course series and applies more advanced elements of theory, technical design and patient management.

APPH 6971. Introduction to Prosthetics and Orthotics. 1 Credit Hour.
This course introduces basic processes for fabrication of prostheses and orthoses. Clinical methods associated with the provision of prostheses and orthoses will also be introduced.

APPH 6975. Introduction to Prosthetics. 2 Credit Hours.
This course introduces the history and development of external limb prostheses including their design, alignment, socket interfaces, suspension mechanisms, and components.

APPH 6997. Assistive Technology. 1 Credit Hour.
Theories and devices associated with assistive technology and mobility aids, emphasizing topics important to clinical practice in prosthetics and orthotics.
APPH 6999. Clinical Practicum in Prosthetics and Orthotics. 1-21 Credit Hours.
Clinical observation of the practice of prosthetics and orthotics and related medical disciplines.

APPH 8000. Seminar. 3 Credit Hours.
The purpose of this course is for students to learn the research process from the early stage of identifying a question through publication of work.

APPH 8009. Research Seminar I. 1 Credit Hour.
A forum for graduate students in prosthetics and orthotics to present topics related to their research interests.

APPH 8010. . 1 Credit Hour.
A forum for graduate students in prosthetics and orthotics to present and discuss topics related to their research interests.

APPH 8012. Research Seminar III. 3 Credit Hours.
A forum for graduate students in prosthetics and orthotics to present topics related to their research interests.

APPH 8801. Special Topics. 1 Credit Hour.
Topics of special interest not covered in the regular course offerings.

APPH 8802. Special Topics. 2 Credit Hours.
Topics of special interest not covered in the regular course offerings.

APPH 8803. Special Topics. 3 Credit Hours.
Topics of special interest not covered in the regular course offerings.

APPH 8804. Special Topics. 4 Credit Hours.
Topics of special interest not covered in the regular course offerings.

APPH 8813. Special Topics. 3 Credit Hours.
Topics of current interest not covered in other courses.

APPH 8823. Special Topics. 3 Credit Hours.
Topics of current interest not covered in other courses.

APPH 8833. Special Topics. 3 Credit Hours.
Topics of current interest not covered in other courses.

APPH 8901. Special Problems. 1-21 Credit Hours.
Individual studies and/or experimental investigations of problems of current interest.

APPH 8902. Special Problems. 1-21 Credit Hours.
Individual studies and/or experimental investigations of problems of current interest.

APPH 8903. Special Problems. 1-21 Credit Hours.
Individual studies and/or experimental investigations of problems of current interest.

APPH 8904. Special Problems. 1-21 Credit Hours.
Individual studies and/or experimental investigations of problems of current interest.

APPH 8997. Teaching Assistantship. 1-21 Credit Hours.
This course if for students holding a graduate teaching assistantship.

APPH 8998. Research Assistantship. 1-9 Credit Hours.
For graduate students holding research assistantships.

APPH 9000. Doctoral Thesis. 1-21 Credit Hours.