



College of Health Professions
Department of Physical Therapy
Doctor of Philosophy in Physical Therapy Program
Course Descriptions

9620 Human Movement Science I - Neural Factors (3 SH) Current theories and research pertaining to the neural mechanisms of motor control and sensorimotor integration will be introduced as a foundation for the evaluation and treatment of movement and balance deficits. Studies involving lesions of the nervous system will be discussed to demonstrate the impact of neural impairments on motor performance and motor learning. The course will also introduce the neurophysiologic methods to evaluate the relationship between neural circuitry and human movement (e.g., MRI, EEG, single unit recording, PET)

9621 Human Movement Science III - Cognition and Learning (3 SH) A survey of theory and research concerning the cognitive processes of the human brain and motor behavior will be conducted. Emphasis will be placed on the developmental changes that underlie cognition as they relate to motor behavior. These objectives will be approached by examining lifespan motor development and learning, attentional mechanisms, perceptual effects on motor output, implicit and procedural memory effects on motor control, automatic compensatory responses and/or strategies following injury or disease, and adaptation to long and short term changes in the body or environment.

9624 Human Movement Science III - Mechanics and Models (3 SH) Application of mechanical principles to static and dynamic models of human posture and movement, and the mechanical properties of the link-segment systems and biological tissues will be introduced in this course. Dynamical systems framework will be introduced as a basis for understanding the organization of complex movement patterns. Other systems, computational, and statistical models that are commonly used to analyze and describe the mechanisms of human posture and movement will be discussed. Interpretation of the model predictions will be based on healthy individuals in addition to those with movement deficits.

9653 Research Strategies (3 SH) This course is designed to provide students information and skills needed to critique and conduct research in rehabilitation and movement science related research areas. This core course provides grounding in critical thinking; a research training framework for the planning, design and development of research questions and hypotheses; strategies to conduct and interpret experimental and observational research; discussion of limitations and significance of common research design and applied statistics; effective writing and research dissemination strategies; and ethical considerations in the conduct of research.

9654 Laboratory Rotations (3 SH) Full time work in the laboratory of a faculty member to learn instrumentation and techniques pertinent to the area of research the student wishes to pursue. Two rotations required.

9673 Curricular Design and Teaching in the Health Professions (3 SH) Introduction to philosophical orientations and alternative curricular designs for professional health care academic and clinical education programs. Theories of learning, teaching strategies and the evaluation process.

9675 Teaching Practicum (3 SH) Practicum in teaching in the professional physical therapy curriculum. Students contract with a faculty member for guided development, presentation and evaluation of a course segment based on principles and concepts covered in 9673.

9682 Independent Study (1-3 SH) Individualized study with a faculty member in topics of relevance to the student's course of study.

9994 Preliminary Exam Preparation (1 SH) Limited to doctoral students who have completed all required coursework. Independent study in preparation for the preliminary examination.

9998 Dissertation Proposal Preparation (1-3 SH) Limited to doctoral students who have passed the preliminary examination. Independent study in preparation for defense of the dissertation proposal.

9999 Dissertation Research and Colloquium (1-3 SH) Limited to doctoral students who have passed the preliminary examination and successfully defended their dissertation proposal. Continuous registration in the fall and spring semesters is required until the oral defense has been passed. Students are required to attend a colloquia held during the fall and spring semesters.