

# Physical Therapy, Rehabilitation Science, and Athletic Training

The department offers the following programs:

The Master of Science in Athletic Training (<https://catalog.ku.edu/health-professions/physical-therapy-rehabilitation-science/mat/>) (MSAT) program offers the required entry-level degree for students planning to become athletic trainers.

The Doctor of Physical Therapy (<https://catalog.ku.edu/health-professions/physical-therapy-rehabilitation-science/dpt/>) (DPT) program offers the required entry-level degree for students planning to become physical therapists.

In conjunction with the DPT program, the following dual degree programs (<https://catalog.ku.edu/health-professions/physical-therapy-rehabilitation-science/dpt/#combineddegreestext>) are offered:

1. A dual DPT/MBA (<https://catalog.ku.edu/health-professions/physical-therapy-rehabilitation-science/dpt/#combineddegreestext>) degree program is available to outstanding DPT students interested in becoming physical therapists prepared for the complicated health finance and management fields with business knowledge and experience.
2. A dual DPT/MHSA (<https://catalog.ku.edu/health-professions/physical-therapy-rehabilitation-science/dpt/#combineddegreestext>) degree program prepares DPT students for management and leadership positions in health care organizations.
3. A dual DPT/Ph.D. (<https://catalog.ku.edu/health-professions/physical-therapy-rehabilitation-science/dpt/#combineddegreestext>) in rehabilitation science degree program is available to outstanding applicants with backgrounds in health-related sciences who wish to become physical therapists and engage in research related to rehabilitation science.

The Doctor of Philosophy (Ph.D.) in Rehabilitation Science (<https://catalog.ku.edu/health-professions/physical-therapy-rehabilitation-science/phd/>) program prepares outstanding leaders who advance innovative interdisciplinary research in rehabilitation science.

The Department of Physical Therapy, Rehabilitation Science, and Athletic Training is one of eight departments of the KU School of Health Professions at the KU Medical Center in Kansas City, KS.

## Courses

### ATTR 701. Foundations in Athletic Training. 1 Credits.

Introduction to foundational content and basic skills of clinical practice for the athletic training profession. Specific emphasis is placed on behavioral practices of healthcare professionals and clinical skills in patient management. Prerequisite: Admission into the MSAT program or permission of instructor.

### ATTR 708. Applied Anatomy. 1 Credits.

This course introduces how to use anatomical knowledge to gather basic examination information about the patient. Learning opportunities include

lecture and laboratory. Prerequisite: Admission into the MSAT program or permission of instructor.

### ATTR 709. Advanced Topics in Human Anatomy. 6 Credits.

The student will obtain a basic understanding of human gross anatomy with specific knowledge of upper and lower extremities, head and neck, back and neural structures. At the end of this course the student will be able to apply this knowledge of anatomy to functional and clinical situations. Prerequisite: Admission into the MSAT program or permission of instructor.

### ATTR 713. Integrated Clinical Education I. 2 Credits.

This course consists of supervised experiences in a clinical setting and seminar sessions that provide opportunities for application of didactic course work. Emphasis will be placed on developing communication, interpersonal, and documentation skills, as well as other athletic training skills and procedures that have been introduced in courses. Prerequisite: Successful completion of the first semester of the MSAT curriculum or permission of instructor.

### ATTR 714. Evaluation & Management I. 4 Credits.

Review of integrative human pathophysiology with an emphasis upon homeostatic mechanisms and etiologies of disease. The interrelationships of function and dysfunction at the molecular, cellular and tissue level (pathology), organ and systemic level (impairment) and to the total human body (functional limitations) will be applied in each of the body systems. Discussions and applied materials will be tailored to the athletic trainer with an emphasis on clinical tools to medically screen patients for the presence of symptoms and signs. Prerequisite: Successful completion of the first semester of the MSAT curriculum or permission of instructor.

### ATTR 716. Interventions I. 2 Credits.

Application of the skills obtained in clinical coursework and clinical problem-solving using common athletic training interventions. Prerequisite: Successful completion of the first semester of the MSAT curriculum or permission of instructor.

### ATTR 718. Documentation and Health Informatics. 1 Credits.

Emphasizes the development of effective documentation skills, including exposure to a variety of documentation formats across various practice setting and implications for proper reimbursement. Concepts of healthcare informatics are introduced including use of an electronic documentation systems and the capability of information systems to support quality care. Disablement classification models, behavioral objectives, and functional outcome concepts are applied to organize patient data and identify treatment goals. Prerequisite: Successful completion of the first semester of the MSAT curriculum or permission of instructor.

### ATTR 719. Applied Kinesiology and Biomechanics. 4 Credits.

This course involves a study of joint structure and function, and biomechanical principles underlying human motion. Emphasis is placed on the application of kinesiological principles to athletic training situations. Learning opportunities include lecture and laboratory. Prerequisite: Successful completion of the first semester of the MSAT curriculum or permission of instructor.

### ATTR 723. Integrated Clinical Education II. 2 Credits.

This course consists of supervised experiences in a clinical setting and seminar sessions that provide opportunities for application of didactic course work. Emphasis will be placed on developing communication, interpersonal, and documentation skills, as well as other athletic training skills and procedures that have been introduced in courses. Prerequisite: Successful completion of the first 2 semesters of the MSAT curriculum or permission of instructor.

### ATTR 724. Evaluation & Management II. 6 Credits.

Builds on the foundation from anatomy, kinesiology and biomechanics. Examination skills and treatment interventions that apply specifically to the musculoskeletal system are provided. Basic examination skills, gait analysis, and therapeutic exercise are discussed and reviewed for common orthopedic conditions. The course will integrate instruction with case-based clinical problem solving. Prerequisite: Successful completion of the first 2 semesters of the MSAT curriculum or permission of instructor.

**ATTR 725. Research Seminar. 1 Credits.**

An introduction to research in evidence-based practice that allows students to develop clinical questions and integrate evidence into clinical practice. Emphasis is placed on clinical research pertinent to athletic training. Prerequisite: Successful completion of the first 2 semesters of the MSAT curriculum or permission of instructor.

**ATTR 726. Interventions II. 2 Credits.**

Application of the skills obtained in clinical coursework and clinical problem-solving using common athletic training treatment interventions. Prerequisite: Successful completion of the first 2 semesters of the MSAT curriculum or permission of the instructor.

**ATTR 727. Clinical Reasoning I. 1 Credits.**

Explores the nature of clinical reasoning and involves self-reflection, informed decision making, and medical ethics in managing patient care. Knowledge and skills from the curriculum taught to this point will be incorporated through the use of case studies and simulations within the students' educational exposure. The Capstone Project will be introduced. Prerequisite: Successful completion of the first 2 semesters of the MSAT curriculum or permission of instructor.

**ATTR 755. Pharmacology. 2 Credits.**

Pharmacological background for the clinical treatment of patients. Fundamentals of the actions of drugs including mechanisms of therapeutic and adverse effects. Prerequisite: Successful completion of the first semester of the MSAT curriculum or permission of instructor.

**ATTR 793. Integrated Clinical Education III. 1 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide opportunities for application of didactic course work. Emphasis will be placed on developing communication, interpersonal, and documentation skills, as well as other athletic training skills and procedures that have been introduced in courses. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 800. Independent Study. 1-8 Credits.**

Individually negotiated learning experiences appropriate to the interests and background of the student. Prerequisite: Admission to the MSAT program, or permission of instructor.

**ATTR 807. Clinical Reasoning II. 1 Credits.**

Application and integration of clinical reasoning and medical ethics in managing patient care. Knowledge and skills from the curriculum taught to this point will be incorporated through the use of case studies and simulations within the students' educational exposure. The Capstone Project will continue. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 812. Health Care Administration. 2 Credits.**

Contemporary issues in health care which impact the practice of athletic training in the health care system. Changes in the US health care system will be discussed, including managed care, plus essential elements and principles of management in health care organizations, and an overview of human resources and operational management. Financial management specifically reimbursement for patient services, risk management, information management, and compliance will be discussed. Discussion

of professional development is intertwined throughout the course. Students will be exposed to business development and entrepreneurial skills needed to practice. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 813. Clinical Experience I. 2 Credits.**

An immersive clinical experience that allows for graduated autonomy in developing and providing patient centered skills for successful health care practice. The student will work alongside and under the supervision of a Preceptor to experience all aspects of athletic training practice. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 814. Evaluation & Management III. 2 Credits.**

Incorporates concepts from anatomy, kinesiology, basic biomechanics and knowledge of peripheral joint examination and treatment. Terminology, examination, evaluation, development of a treatment plan and treatment techniques and basic differential diagnosis skills for the head, neck, and spine are taught. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 816. Interventions III. 1 Credits.**

Application of the skills obtained in clinical coursework and clinical problem-solving using common athletic training interventions. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 818. Medical Imaging. 1 Credits.**

An introduction to medical imaging and an overview of its role in the health care delivery system. Topics include basic imaging equipment with an emphasis on digital acquisition and processing. Factors affecting the quality of images and limitations to the techniques are reviewed. Imaging techniques covered include: X-rays, CT scans, Nuclear medicine, ultrasound, MRI and PET. This course will include a component covering the microscopic anatomy of cells. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 821. Athletic Training Seminar. 1 Credits.**

Graduate seminar focusing on current issues in athletic training and preparation for the athletic training credentialing exam. Prerequisite: Successful completion of the first 4 semesters of the MSAT curriculum or permission of instructor. Corequisite: ATTR 843.

**ATTR 822. Behavioral Health. 1 Credits.**

Exploration of the development and integration of behavioral, psychosocial, and biomedical science knowledge and techniques relevant to the understanding of health and illness. Content will include application of knowledge and techniques to patient centered care. Prerequisite: Successful completion of the first 4 semesters of the MSAT curriculum or permission of instructor. Corequisite: ATTR 843.

**ATTR 824. Performance Enhancement. 1 Credits.**

Development and application of interventions to optimize sport performance. Prerequisite: Successful completion of the first 4 semesters of the MSAT curriculum or permission of instructor. Corequisite: ATTR 843.

**ATTR 827. Clinical Reasoning III. 1 Credits.**

Application and integration of clinical reasoning and medical ethics in managing patient care. Knowledge and skills from the curriculum taught to this point will be incorporated through the use of case studies and simulations within the students' educational exposure. The Capstone Project will continue. Prerequisite: Successful completion of the first 4 semesters of the MSAT curriculum or permission of instructor. Corequisite: ATTR 843.

**ATTR 837. Clinical Reasoning Capstone. 1 Credits.**

Application and integration of clinical reasoning and medical ethics in managing patient care. Knowledge and skills from the curriculum taught to this point will be incorporated through the use of case studies and simulations within the students' educational exposure. The Capstone Project will be completed. Prerequisite: Successful completion of the first 5 semesters of the MSAT curriculum or permission of instructor.

**ATTR 843. Clinical Experience II. 4 Credits.**

An immersive clinical experience that allows for graduated autonomy in developing and providing patient centered skills for successful health care practice. The student will work alongside and under the supervision of a Preceptor to experience all aspects of athletic training practice. Prerequisite: Successful completion of the first 4 semesters of the MSAT curriculum or permission of instructor. Corequisite: ATTR 863.

**ATTR 863. Integrated Clinical Education IV. 1 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide opportunities for application of didactic course work. Emphasis will be placed on developing communication, interpersonal, and documentation skills, as well as other athletic training skills and procedures that have been introduced in courses. Prerequisite: Successful completion of the first 4 semesters of the MSAT curriculum or permission of instructor. Corequisite: ATTR 843.

**ATTR 883. Clinical Experience III. 8 Credits.**

An immersive clinical experience that allows for graduated autonomy in developing and providing patient centered skills for successful health care practice. The student will work alongside and under the supervision of a Preceptor to experience all aspects of athletic training practice. Prerequisite: Successful completion of the first 5 semesters of the MSAT curriculum or permission of instructor.

## Courses

**PTRS 702. Physical Therapy Documentation and Health Informatics. 1 Credits.**

Emphasizes the development of effective documentation skills, including exposure to a variety of documentation formats across various practice setting and implications for proper reimbursement. Concepts of healthcare informatics are introduced including use of an electronic documentation systems and the capability of information systems to support quality care. Disablement classification models, behavioral objectives, and functional outcome concepts are applied to organize patient data and identify treatment goals. Prerequisite: Successful completion of semester 1 of the DPT curriculum or permission of instructor.

**PTRS 703. Applied Anatomy. 1 Credits.**

This course introduces the learner to how physical therapists use anatomical knowledge to gather basic examination information about the patient. Prerequisite: Admission into the DPT program or permission of instructor.

**PTRS 704. Physical Therapy Interventions I. 3 Credits.**

This course focuses on development of skills required by the physical therapist in the generalist acute care environment. Emphasis is placed on body mechanics, workplace safety, infection control, basic mobility assessment, transfers, positioning, line management, responding to clinical emergencies, wheelchair basics, therapeutic exercise, assistive devices, gait training, plan of care and discharge planning. Prerequisite: Successful completion of semester 1 of the DPT curriculum or permission of instructor.

**PTRS 705. Physical Therapy Interventions II. 4 Credits.**

This course will introduce the principles and application of therapeutic biophysical agents. Students will apply skills obtained in previous course work and begin clinical problem-solving using common physical therapy

treatment interventions. Topics include integumentary management for wound healing interventions, therapeutic modalities with an emphasis on the healing process, and electrical modalities. Prerequisite: Successful completion of the first 2 semesters of the DPT curriculum or permission of the instructor.

**PTRS 710. Advanced Topics in Human Anatomy. 6 Credits.**

The student will obtain a basic understanding of human gross anatomy with specific knowledge of upper and lower extremities, head and neck, back and neural structures. At the end of this course the student will be able to apply this knowledge of anatomy to functional and clinical situations. Prerequisite: Admission into the DPT program or permission of instructor.

**PTRS 711. Applied Kinesiology and Biomechanics. 4 Credits.**

This course involves a study of joint structure and function, and biomechanical principles underlying human motion. Emphasis is placed on the application of kinesiological principles to clinical physical therapy situations. Prerequisite: Successful completion of semester 1 of DPT curriculum or permission of instructor.

**PTRS 720. Integrated Clinical Experience I. 1 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide preliminary opportunities for application of didactic course work. Emphasis will be placed on the development of communication and interpersonal skills in the clinical setting, as well as documentation and physical therapy skills and procedures that have been introduced in courses. Prerequisite: Successful completion of semester 1 of the DPT curriculum or permission of instructor.

**PTRS 730. Integrated Clinical Experience II. 1 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide preliminary opportunities for application of didactic course work. Emphasis will be placed on the development of communication and interpersonal skills in the clinical setting, as well as documentation and physical therapy skills and procedures that have been introduced in courses. Prerequisite: Successful completion of the first 2 semesters of the DPT curriculum or permission of instructor.

**PTRS 745. Orthopedic Physical Therapy I. 6 Credits.**

This course builds on the foundation from anatomy, kinesiology and biomechanics. Examination skills and treatment interventions that apply specifically to the musculoskeletal system are provided. Basic examination skills for all peripheral joints, gait analysis, and therapeutic exercise are discussed and reviewed for common orthopedic conditions. The course will integrate instruction with case-based clinical problem solving. Prerequisite: Successful completion of the first 2 semesters of the DPT curriculum or permission of instructor.

**PTRS 746. Musculoskeletal Conditions and Management. 3 Credits.**

Mastery of physical therapy subjective and objective examination and treatment intervention for patients of all ages who present with a musculoskeletal problem with emphasis on amputation, prosthetics, upper and lower extremity orthoses, fracture management and connective tissue disorders. Emphasis will be placed on the most common clinical problems and physical therapy diagnoses. Prerequisite: Successful completion of the first 2 semesters of the DPT curriculum or permission of instructor.

**PTRS 750. Research in Evidence-Based Physical Therapy Practice. 3 Credits.**

An introduction to research in the evidence-based physical therapy practice including the Scientific Method, library and multimedia resources, research process, measurement theory (reliability and validity), research designs, experimental design principles, research ethics, critical review and analysis of research publications, statistical concepts, and writing

of a research report and/or research proposal. Throughout, emphasis is placed on clinical research pertinent to physical therapy. Prerequisite: Successful completion of the first 2 semesters of the DPT curriculum or permission of instructor.

**PTRS 807. Ethics in Health Care. 1 Credits.**

This course covers the basic ethical concepts, principles, relevant theories, and ethical decision-making models applied to major contemporary health care issues and dilemmas facing health professionals. Development of skills for ethical clinical decision making is the focus. Prerequisites: Permission of instructor.

**PTRS 817. Ethics in Health Care. 2 Credits.**

This course covers basic ethical concepts, principles, relevant theories and ethical decision-making models applied to major contemporary health care issues and dilemmas facing health professionals. Development of skills for ethical clinical decision making is the focus. Prerequisite: Successful completion of the first 6 semesters of the DPT curriculum or permission of instructor.

**PTRS 825. Exercise Physiology. 3 Credits.**

This course will provide entry-level DPT students with the knowledge of the physiological functions and adaptations of the human body with exercise. Emphasis will be placed on familiarizing students with sound medical rationale and the basis for treatment considering the immediate and long-term effects of exercise. Prerequisite: Successful completion of the first 3 semesters of the DPT curriculum, or consent of the instructor.

**PTRS 826. Cardiopulmonary Physical Therapy. 5 Credits.**

Anatomy, physiology and pathophysiology of the cardiovascular and pulmonary systems are studied and related to clinical signs and symptoms. Students are introduced to common evaluation and treatment techniques, as well as the rationale for including physical therapy in the management of cardiopulmonary conditions. These topics are discussed in conjunction with case studies and current research. Prerequisite: Successful completion of the first 5 semesters of the DPT curriculum or permission of instructor.

**PTRS 828. Medical Imaging. 1 Credits.**

An introduction to medical imaging and an overview of its role in the health care delivery system. Topics include an introduction to basic imaging equipment with an emphasis on digital acquisition and processing. Factors affecting the quality of images and limitations to the techniques are reviewed. Imaging techniques covered include: X-rays, CT scans, Nuclear medicine, ultrasound, MRI and PET. This course will also include a component covering the microscopic anatomy of cells. Prerequisite: Admission to the DPT program or permission of instructor.

**PTRS 830. Integrated Clinical Experience III. 2 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide intermediate opportunities for application of didactic course work. Emphasis will be placed on the development of communication and interpersonal skills in the clinical setting, as well as documentation and physical therapy skills and procedures that have been introduced in courses. Prerequisite: Successful completion of the first 4 semesters of the DPT curriculum or permission of instructor.

**PTRS 833. Pediatric Physical Therapy. 4 Credits.**

This course introduces fundamental concepts necessary for the entry-level physical therapist to examine, evaluate, and treat the pediatric client. Lecture and lab experiences emphasize a problem oriented approach to physical therapy management of children with musculoskeletal, neurological, and/or cardiopulmonary impairments. Students will learn to recognize components of normal and abnormal development, particularly during the first year of life. Prerequisite: Successful completion of the first 5 semesters of the DPT curriculum or permission of instructor.

**PTRS 840. Integrated Clinical Experience IV. 2 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide intermediate opportunities for application of didactic course work. Emphasis will be placed on the development of communication and interpersonal skills in the clinical setting, as well as documentation and physical therapy skills and procedures that have been introduced in courses. Prerequisite: Successful completion of the first 5 semesters of the DPT curriculum or permission of instructor.

**PTRS 845. Orthopedic Physical Therapy II. 6 Credits.**

This course incorporates concepts from anatomy, kinesiology and basic biomechanics, and knowledge of peripheral joint examination and treatment. Terminology, examination, evaluation, development of a treatment plan and treatment techniques and basic differential diagnosis skills for the spine and the temporomandibular joint are taught. Prerequisite: Successful completion of the first 4 semesters of the DPT curriculum or permission of instructor.

**PTRS 846. Orthopedic Physical Therapy III. 3 Credits.**

This course incorporates concepts from anatomy, kinesiology, biomechanics, and Orthopedic Physical Therapy I and II courses. Terminology, examination, evaluation, development of a treatment plan and treatment techniques and advanced differential diagnosis skills for complex peripheral and/or spinal disorders are taught. Prerequisite: Successful completion of the first 6 semesters of the DPT curriculum or permission of instructor.

**PTRS 852. Neurologic Physical Therapy and Rehabilitation I. 6 Credits.**

This course will introduce the principles of neuroscience and describe their application as relevant to physical therapists. The course will introduce the terminology of the nervous system and cover the major functions of the nervous systems. This course will also integrate neurophysiology and neuroanatomy into the clinical presentation of adults with neurologic pathology. The etiology, epidemiology signs, and symptoms of selected neurological conditions will be presented. The medical management of patients with nervous system disorders will be presented in relationship to the practice of physical therapy. The course will introduce examination of impairments for persons with neuromuscular pathologies. Students will be presented with simple case studies and progress to more complex patient problems. Prerequisite: Successful completion of the first 4 semesters of the DPT curriculum or permission of instructor.

**PTRS 853. Neurologic Physical Therapy and Rehabilitation II. 5 Credits.**

This course will focus on rehabilitation approaches for people with neurologic pathology. Students will examine factors that contribute to the control of voluntary movement and the learning of motor skills, and develop an understanding of the relationship between the brain and the purposeful movements that make us human. Students will acquire the skills to hypothesize about the relationship of health conditions and body function/structure to limitations in activities and participation in adults with neurologic pathology. A clinical decision making approach will combine contemporary rehabilitation approaches, consideration of psychosocial and cognitive factors, and research evidence in the discussion of complex patient cases. After completing this course, students will demonstrate novice-level knowledge and skills necessary to complete a physical therapy examination and develop a comprehensive treatment plan for adults with neurologic pathology. Prerequisite: Successful completion of the first 5 semesters of the DPT curriculum or permission of the instructor.

**PTRS 854. Pharmacology. 2 Credits.**

This course provides an understanding of pharmacology, focusing on the principles of drug action, therapeutic uses, side effects, and the



mechanisms by which drugs affect the human body. The course covers a wide range of topics, including pharmacokinetics, pharmacodynamics, drug classifications, and the role of drugs in treating various diseases and conditions. Prerequisite: Permission of instructor.

**PTRS 855. Pharmacology for Physical Therapists. 2 Credits.**

Pharmacological background for the clinical treatment of patients referred to physical therapy. Fundamentals of the actions of drugs including mechanisms of therapeutic and adverse effects. Prerequisite: Successful completion of semester 1 of the DPT curriculum or permission of instructor.

**PTRS 860. Evidence-Based Research Practicum I. 1 Credits.**

Supervised and directed experiences in conducting evidence-based research activities. The research activities involved in this course are broadly defined with emphasis on the enhancement of evidence-based physical therapy practice. The student will be supervised by a member of the faculty. This course is the first of a two-part series of courses, including PTRS 861. Prerequisite: Successful completion of the first 3 semesters of the DPT curriculum or permission of instructor.

**PTRS 861. Evidence-Based Research Practicum II. 1 Credits.**

Supervised and directed experiences in conducting evidence-based research activities. The research activities involved in this course are broadly defined with emphasis on the presentation and communication of an evidence-based research project. The student will be supervised by a member of the faculty. This course is the second of a two-part series of courses, including PTRS 860. Prerequisite: Successful completion of the first 6 semesters of the DPT curriculum, or consent of instructor.

**PTRS 865. Independent Study. 1-3 Credits.**

Individually negotiated learning experiences appropriate to the interests and background of the student. Prerequisite: Admission to the DPT program, or permission of instructor.

**PTRS 877. Administration in Physical Therapy. 2 Credits.**

Designed to familiarize the entry-level therapist with contemporary issues in health care which impact the practice of physical therapy in the health care system. Changes in the US health care system will be discussed, including managed care, plus essential elements and principles of management in health care organizations, and an overview of human resources and operational management. Financial management specifically reimbursement for patient services, risk management, information management, and compliance will be discussed. Discussion of professional development is intertwined throughout the course. Students will be exposed to business development and entrepreneurial skills needed to expand or start up a physical therapy practice. Prerequisite: Successful completion of the first 3 semesters of the DPT curriculum or permission of instructor.

**PTRS 882. Pathophysiology and Physical Therapist Screens. 6 Credits.**

Review of integrative human pathophysiology with an emphasis upon homeostatic mechanisms and etiologies of disease. The interrelationships of function and dysfunction at the molecular, cellular and tissue level (pathology), organ and systemic level (impairment) and to the total human body (functional limitations) will be applied in each of the body systems. Discussions and applied materials will be tailored to the physical therapist with an emphasis on clinical tools to medically screen patients for the presence of symptoms and signs. Prerequisite: Successful completion of semester 1 of the DPT curriculum or permission of instructor.

**PTRS 890. Specialties in Physical Therapy Practice. 2 Credits.**

Requires students to apply the five elements of patient/client management for addressing multi-system impairments across diverse and complex patient populations. Exposure to physical therapy advanced practice

specialty areas included, but not limited to, sport medicine, women's health, neurology, pediatrics, geriatrics, and oncology. Seminar format instruction incorporating case-based instruction, group discussion, and speakers with advanced clinical credentials. Prerequisite: Successful completion of the first 6 semesters of the DPT curriculum or permission of instructor.

**PTRS 920. Full-Time Clinical Experience I. 6-8 Credits.**

Nine to twelve weeks of full-time clinical experience. During the clinical rotation, the student will have the opportunity to develop the patient care skills needed for successful practice as a physical therapist. The student will work under the supervision of an experienced physical therapist in clinical settings affiliated with the program. Prerequisite: Successful completion of the first 7 semesters of the DPT curriculum or permission of instructor.

**PTRS 921. Full-Time Clinical Experience II. 6-8 Credits.**

Nine to twelve weeks of full-time clinical experience. During the clinical rotation, the student will have the opportunity to develop the patient care skills needed for successful practice as a physical therapist. The student will work under the supervision of an experienced physical therapist in clinical settings affiliated with the program. Prerequisite: Successful completion of the first 7 semesters of the DPT curriculum or permission of instructor.

**PTRS 922. Full-Time Clinical Experience III. 6-8 Credits.**

Nine to twelve weeks of full-time clinical experience. During the clinical rotation, the student will have the opportunity to develop the patient care skills needed for successful practice as a physical therapist. The student will work under the supervision of an experienced physical therapist in clinical settings affiliated with the program. Prerequisite: Successful completion of the first 7 semesters of the DPT curriculum or permission of instructor.

**PTRS 923. Full-Time Clinical Experience IV. 2-6 Credits.**

Three to nine weeks of full-time clinical experience. During the clinical rotation the student will have the opportunity to develop the patient care skills needed for successful practice as a physical therapist. The student will work under the supervision of an experienced physical therapist in clinical settings affiliated with the program. Prerequisite: Successful completion of the first 7 semesters of the DPT curriculum or permission of instructor.

**PTRS 924. Specialized Clinical Experience. 1-6 Credits.**

One and a half to nine weeks of clinical experience. During the clinical rotation the student will have the opportunity to have exposure to a different health care system such as an international clinical experience, or a specialized area of physical therapy practice. The student will be under the supervision of an experienced physical therapist in clinical settings affiliated with the program. Prerequisite: Successful completion of the first 7 semesters of the DPT curriculum or permission of instructor.

## Courses

**REHS 760. Introduction to Matlab Programming. 1 Credits.**

Introduction: matlab windows, input-output, file types, general commands; interactive computation; matrices and vectors, matrix and array operations, scripts and functions applications, graphics. Prerequisite: None

**REHS 803. Research Observations. 1 Credits.**

Students will be introduced to different types of research projects conducted in the department. Students will rotate in up to three research laboratories, sequentially, during a semester. The course is designed to help students select a faculty researcher to mentor them in their

dissertation research. Prerequisite: Entry into the PhD in Rehabilitation Science program.

**REHS 805. Seminar in Rehabilitation Science. 1 Credits.**

Students will become familiar with the organization of an experimental scientific paper and learn how to critically assess papers in the field of rehabilitation science. Students will develop writing skills by summarizing scientific papers and communication skills by orally presenting and discussing research literature with his/her peers and colleagues, course coordinator and other faculty members. Prerequisite: Entry in the PhD program in Rehabilitation Science or permission of instructor.

**REHS 856. Research Design and Methods I. 2 Credits.**

An introduction to research design and methods including library and multimedia resources; research process; measurement theory (reliability and validity); experimental design principles; single subject design and other non-experimental design; critical thinking skill and procedure; critical review and analysis of a research article; basic scientific writing skills; and skills in writing a research report/manuscript. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 857. Research Design and Methods II. 2 Credits.**

An introduction to research design and method including critically appraising the state of art on a research topic; conducting a systematic review of literature; basic concept of statistical analysis, performing and interpreting data analysis using parametric, non-parametric, or correlational analyses; preparation of a research proposal focusing on study rational, novelty, and research questions and hypotheses; ethical issues related to research; basic knowledge of bioinformatics; meta-analysis; and writing of a research proposal. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 862. Cellular and Molecular Basis of Rehabilitation. 2 Credits.**

A study of the biology, at the cellular and molecular levels, of pathological processes that impair human function will highlight the mechanisms by which cells/tissues repair and/or adapt following disease/injury or aging. Emphasis will be placed on the body's endogenous ability for rehabilitation or adaptation to disease/injury. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 864. Introduction to Rehabilitation Science. 3 Credits.**

This course provides introduction to and overview of rehabilitation science, an interdisciplinary field of study that focuses on restoring functional capacity in a person and improving their interactions with the surrounding environment. Different areas of rehabilitation science will be presented. Features of the pathological conditions and targeted individuals, factors that contribute to the outcomes of the rehabilitation, research tools and measurements, potential optimal rehabilitation techniques, and directions of future research will be discussed. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 865. Independent Study. 1-3 Credits.**

Individually negotiated learning experiences appropriate to the interests and background of the student. Prerequisite: Entry in the PhD in Rehabilitation Science program, or permission of instructor. IND

**REHS 866. Developing Research Aims in Rehabilitation Science. 2 Credits.**

Students will practice writing specific aims, hypothesis and general study design of a research proposal. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 870. Teaching Practicum. 1-3 Credits.**

Directed experiences in a planned instructional activity. Student will write course objectives, plan and deliver lectures, produce practical and written

exams and assign grades. Prerequisite: Entry in the PhD in Rehabilitation Science program or consent of instructor.

**REHS 873. Research Practicum. 1-3 Credits.**

This course is designed to provide supervised research experience in various laboratories in the department. Prerequisite: Entry in the PhD in Rehabilitation Science program, or consent of instructor.

**REHS 875. Clinical Practicum. 1-3 Credits.**

Specialized clinical training in a highly specific area of specialization. The primary purpose of this course is for the student to develop advanced clinical skills in his/her area of specialization. Prerequisite: Admission to the PhD in Rehabilitation Science program, and permission of instructor.

**REHS 883. Landscape of Exercise and Physical Activity for Health. 3 Credits.**

This course will examine the role of physical activity in the prevention, treatment, and management of chronic diseases and conditions. This course will cover methods used to measure physical activity, the effects of physical activity on health, and strategies for physical activity promotion. This course will provide students opportunities to practice summarizing key information from articles and organize the literature. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 884. Motor Control and Learning. 3 Credits.**

The course will explore the study of the conditions and factors that influence the acquisition, control, and performance of motor skills. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 886. Musculoskeletal Rehabilitation. 3 Credits.**

This course will explore the current concepts in musculoskeletal rehabilitation. The healing process of different types of tissue will be reviewed. The pathophysiological mechanisms of pain and acute and chronic injuries will be studied. Examination, evaluation and treatment interventions for the principal musculoskeletal conditions will be reviewed and discussed. Current scientific literature will be investigated and group discussions will be directed to scientific evidence for the variety of rehabilitation practices in musculoskeletal conditions. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor; REHS 884 Motor Control and Learning or an equivalent.

**REHS 887. Neurorehabilitation. 3 Credits.**

This course will provide an overview of the evidence of neurorehabilitation interventions on all domains of the International Classification of Functioning in various neurological conditions. Following a review of neuroanatomy, neurophysiology, and clinical presentation of common neurological conditions, principles of neuroplasticity and functional re-organization in neurorehabilitation will be outlined. Evidence of traditional concepts and emerging therapies in neurorehabilitation will be presented. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 889. Grant Writing. 3 Credits.**

Research proposal writing for PhD comprehensive examinations and grant applications to federal and private funding agencies including all elements of the grant proposal - aims, innovation, significance and design. The process of grant proposal submission, review and resubmission is covered. Prerequisite: Current enrollment in a recognized graduate degree program or permission of instructor.

**REHS 970. Instrumented Analysis of Human Biomechanical Function. 3 Credits.**

An in-depth study that provides critical analysis of equipment and other resources used in analyzing human motion, balance, strength, electrophysiological responses, and cardiorespiratory function. Students

will be required to conduct a preliminary study, including design, methodology and data collection using one or more of these instruments. Prerequisite: Entry in the PhD in Rehabilitation Science program, or consent of instructor.

**REHS 980. Graduate Research. 1-10 Credits.**

Original laboratory investigation conducted under the supervision of a senior staff member. Prerequisite: Entry in the PhD in Rehabilitation Science program, or consent of instructor.

**REHS 990. Dissertation in Rehabilitation Science. 1-10 Credits.**

For students in advanced standing enrolled in the PhD in Rehabilitation Science program.