

PEAC300 (1)
Lifeguarding
 Instruction in accident prevention, aquatic facility supervision, and water-rescue techniques. Successful completion results in American Red Cross Lifeguard Training certification. Current first aid and CPR certification included. Prerequisite: Ability to swim 500 yards in 10 minutes or less. *Fall*

PEAC330 \$ (1)
Wilderness Living
 Instruction in camping and survival techniques, open fire cooking, orienteering, backpacking, wilderness first aid, edible wild plants, and tracking. Students supply their own equipment. One weekend trip required.

PEAC350 (1)
Water Safety Instructor
 Instruction in techniques for teaching American Red Cross swimming courses. Current CPR certification required. Swimming pretest required. *Spring*

PEAC389 (1)
WSI Internship
 Students who have a current American Red Cross Water Safety Instructor's Certification or equivalent can take advantage of this opportunity. Participants will teach and organize a class of students for the Learn-To-Swim program. Teachers will be expected to provide lesson plans and teach all the required lessons. *Fall, Spring, S/U.*

PHYSICAL THERAPY

Physical Therapy Department
 Andrews University
 Berrien Springs, MI 49104-0420
 (269) 471-AUPT or 800-827-AUPT
 FAX: (269) 471-2866
<http://www.andrews.edu/PHTH/>
 Admissions Fax: (269) 471-2867
 Admissions Email: pt-info@andrews.edu

Faculty

Wayne L. Perry, *Chair*
 A. Lynn Millar, *Assistant Director*
 John C. Banks
 Kathy A. Berglund, *Postprofessional Director*
 John Carlos, Jr.
 Elizabeth Oakley
 Lee E. Olson
 David P. Village

Academic Credits	Credits
BHS: Bachelor of Health Science (Interim degree for DPT students)	
DPT: Doctor of Physical Therapy	116
BS: Anatomy & Physiology (phasing out) Interim degree for MSPT students)	
t-DPT: Doctor of Physical Therapy	30-38
DScPT: Doctor of Science in Physical Therapy	64

Physical therapy is a health profession dedicated to evaluating, treating, and preventing physical injury and disease. Physical therapists design and implement the necessary therapeutic interventions to promote fitness, health and improve the quality of life in patients. They also become active in consultation, education and research.

Physical therapists work closely with their client's family, physician, and other members of the medical team to help their client return to their home environment and resume activities and relationships of normal daily living.

Academic Calendar. Contact the Physical Therapy Department for academic dates.

GRADUATE PROGRAMS

Doctor of Physical Therapy (DPT)

This three-year program begins after a student completes 92 semester credits of college prerequisites. A previous college degree is not required. Students without a bachelor's degree may earn a Bachelor of Health Science (BHS) after the first year in the professional program and will earn the DPT degree upon successful completion of the program.

PROGRAM ACCREDITATION

The DPT program is accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE)*. After receiving the DPT degree graduates may apply to take the state board examination in the state of their choice.

* 1111 North Fairfax, Alexandria, VA 22314

INFORMATION/APPLICATION PACKETS

Please call 1-800-827-2878, email pt-info@andrews.edu or visit www.pt.andrews.edu for packets, which describe admission requirements and provide all necessary forms for the DPT professional entry-level program. Information is available by June of each year. Applicants holding a bachelors or advanced degree are welcome to apply.

ADMISSION REQUIREMENTS

There are three tracks for admission into the DPT program:

Early Acceptance

Acceptance into the program is guaranteed if you enroll as a freshman pre-physical therapy major completing at least 90% of prerequisite course requirements at Andrews University, earn the required GPA and receive positive evaluations.

Preferred Admissions (Early Transfer Students)

Students who transfer into Andrews University for at least their last semester to complete prerequisite courses, earn the required GPA and receive positive evaluations, will be given preference for admission into the professional program.

Transfer Students

The Andrews University physical therapy programs enroll students from a nationwide pool. Any student who has completed prerequisite courses from an accredited college or university (or U.S. equivalent) is welcome to apply for acceptance.

Admission to the DPT program is selective based on the following considerations:

1. **Prerequisite Courses:** A bachelor's degree or 92 semester credits of course work with at least 15 upper division credits from 3 or more content areas.

Biological Sciences—A full sequence of anatomy and physiology or general biology with labs **plus** an upper division science course(s) related to human physiology or human biology.

Physical Sciences—*Option 1:* A full sequence of general physics with labs as required for physics majors or pre-med students **plus** any two chemistry courses with labs; or *Option 2:* A full sequence of general chemistry with labs as required for chemistry majors or pre-med students **plus** any two physics courses with labs.

Medical Terminology—A course in basic medical terminology. May be taken by distance learning.

Computer Applications—A PT department approved basic computer applications course or documentation of proficiency on Computer Literacy Form to those with a bachelor's degree.

Math/Statistics—A basic statistics course.

Psychology—An introductory psychology course.

Human Development—A course which covers physical, social, and psychological development beginning with conception.

* **Social Science**—One course from the following options: sociology, geography, anthropology, minority groups, diversity, economics, American Government.

* **English**—Two English Composition courses which include writing components.

Communication—A course in basic communication skills.

* **Fine Arts**—An appreciation, theory or introductory/history course in music, art, photography, etc. or 1 year of ensemble music (Private music lessons do not apply.)

* **Humanities**—One course from the following options: ethics, cultural perspectives, literature, philosophy, critical thinking, second language, world history, western civilization, U.S. history, American history, Canadian history.

* **Physical Education**—A physical fitness/wellness course.

* **Religion**—One religion course per year is required if attending a Seventh-day Adventist school.

* **Electives**—To fulfill the total 92 semester credits required, some suggestions include service related courses, business courses, cultural and diversity courses, arts and humanities, physical activities, nutrition.

* Prerequisites with an asterisk are not required by applicants holding a bachelors degree from an accredited school.

2. **GPA Requirements:** A minimum GPA of 3.00 in prerequisite science courses and a minimum overall GPA of 3.00 in all prerequisite courses. A grade of "C" or better is required in each prerequisite course.
3. **Clinical Observation:** Document 80 hours (including 20 hours in an inpatient setting) supervised by a licensed physical therapist. All hours must be completed within three years prior to enrollment.
4. **Application Materials:** Applications are accepted when a minimum of 4 or more prerequisite science courses and a minimum of 60 semester credits have been completed.
5. **Personal Interview:** Applicants who meet eligibility requirements are invited for a personal interview. Phone interviews may be acceptable.
6. **Graduate Record Exam (GRE):** Submit scores from the General Test taken less than five years prior to enrollment in the program.
7. **English Proficiency:** See Graduate Programs: English Language Requirements. In addition, applicants whose first language is not English must document successful completion of 20 semester credits of course work with instruction in the English language. An English translation of relevant course descriptions from college catalogs are required for all course work taken in another language.

Bachelors of Health Science (Interim Degree)

Students successfully completing the appropriate prerequisites and the first two semesters (36 credits) of the professional program qualify for the Bachelor of Health Science Degree. Successful completion of the BHS is defined as:

1. An earned minimum grade of "C+" (2.33) or "S" in each DPT program course. The BHS program courses include PTH400, 410, 415, 416, 418, 420, 425, 426, 428, 430, 440, 445, 450, 455, 457, and 460.
2. No more than a cumulative total of five points earned on the grade-point scale throughout the physical therapy program (see DPT Student Handbook).
3. Students must be able to perform skills listed in the Technical Standards of Performance and demonstrate professional behaviors as outlined in the DPT Student Handbook.
4. Maintain a cumulative GPA of 2.50 or greater in all credits used to meet the BHS degree requirements.

Doctor of Physical Therapy (Entry-Level)

Upon successful completion of the professional phase of the program (116 credits) students earn the Doctor of Physical Therapy Degree. All coursework scheduled for each semester must be successfully completed prior to advancing to the next semester. Successful completion of the DPT program is defined as:

1. Completion of a bachelor's degree (BHS or other).

2. Completion of the GRE General Test.
3. An earned minimum grade of "C+" (2.33) or "S" in each DPT program course. DPT program courses include PTH400, 410, 415, 416, 418, 420, 425, 426, 428, 430, 440, 445, 450, 455, 457, 460, 540, 601, 602, 610, 611, 612, 620, 621, 622, 625, 627, 632, 635, 637, 640, 645, 646, 647, 650, 651, 652, 661, 662, 680, 726, 728, 736, 748, 765, 768, 799, 880, 881, 882, 883, 884, and six graduate elective credits.
4. Maintain a cumulative DPT program GPA of 3.00.
5. No more than a cumulative total of five points earned on the grade-point scale throughout the physical therapy program (see DPT Student Handbook).
6. Students must be able to perform skills listed in the Technical Standards of Performance and demonstrate professional behaviors as outlined in the DPT Student Handbook.
7. Satisfactory completion of the practical and written comprehensive exams.
8. Satisfactory completion of a capstone project and presentation.
9. Satisfactory completion of five clinical internships and the associated "Clinical Performance Instrument."

CONTINUED ENROLLMENT REQUIREMENTS

1. Progressive enrollment in the physical therapist education program requires successful completion of all Physical Therapy program course work including clinical education listed for the previous academic term.
2. A student whose cumulative GPA falls below 3.00 in any given academic term is placed on academic probation. Students who do not increase their cumulative GPA to 3.00 during the academic term of probation are normally asked to withdraw.
3. Students who receive less than a "C+" (2.33) or a "U" on a "S/U" course or clinical will be given "grade points" equal to the semester credit for the course. A student who accumulates six or more points will academically disqualify him/herself from continuing in the program.

POSTPROFESSIONAL PROGRAMS

- Transitional Doctor of Physical Therapy (t-DPT)
- Doctor of Science in Physical Therapy (DScPT)

These postprofessional programs are designed to provide practicing physical therapists with the opportunity to obtain post-professional studies and an advanced clinical doctoral degree in the field of their discipline without the need to terminate or significantly change their regular employment or lifestyle. Classes are either taught in a short-course format of no more than six days per session, or done by distance learning. All courses may be taken to earn academic credit or continuing education units (CEUs).

Transitional Doctor of Physical Therapy (t-DPT)

ADMISSION REQUIREMENTS

The following admissions requirements apply.

1. Hold current licensure as a physical therapist in U.S. or Canada.
2. Submit graduate application.
3. Submit a minimum of three satisfactory recommendations: one from a currently practicing physical therapist, one from a medical doctor, and one from another person familiar with the candidate.

4. Graduate of an accredited physical therapy school.
5. Receipt of GRE scores taken within the last 5 years.
6. For candidates holding a bachelor's degree with no advanced master's, receipt of PTET scores.

DEGREE REQUIREMENTS

The following departmental/program requirements apply to students graduating from the postprofessional DPT program.

1. Satisfactory completion of, or competency in, the following courses: PTH500, 507 or 545, 549, 590, 615, 630, 646, 718, 730, 740, 748, 750, 798
2. No grade lower than C (2.0) in any course.
3. A minimum cumulative GPA of 3.00.
4. Successful completion of the capstone project.

Doctor of Science in Physical Therapy (DScPT)

This degree is designed to prepare the clinical specialist in orthopedic manual therapy and incorporates courses from the North American Institute of Orthopedic Manual Therapy.

ADMISSION REQUIREMENTS

The following admissions requirements apply.

1. Hold current licensure as a physical therapist in U.S. or Canada.
2. Proof of employment in an orthopedic setting, at least 20 hours per week.
3. Submit graduate application.
4. Submit a minimum of three satisfactory recommendations: one from a currently practicing physical therapist, one from a medical doctor, and one from another person familiar with the candidate.
5. Graduate of an accredited physical therapy school.
6. Receipt of GRE scores taken within the last 5 years.
7. For candidates holding a bachelor's degree, with no advanced master's, receipt of PTET scores.
8. For candidates holding a master's degree, receipt of professional portfolio.

DEGREE REQUIREMENTS

The following degree requirements apply to students graduating from the DScPT program.

1. For students with a **BS or Masters degree**: Satisfactory completion or competency in the following courses: PTH500, 507 or 545, 536, 537, 538, 546, 547, 548, 550, 590, 615, 630, 646, 718, 730, 740, 748, 760, 798, plus 10 approved elective credits. For students with a **DPT degree**: Satisfactory completion of the following courses: PTH536, 537, 538, 546, 547, 548, 549, 550, 760, 798, plus 5 approved elective credits.
2. Level III Manual Therapy Certification through NAIOMT or equivalent certification from another approved program.
3. Minimum of 2 years of part-time clinical practice (20 hours per week), or equivalent, in orthopedics, to be completed prior to the conferring of the degree.
4. No grade lower than "C" (2.00) in any course.
5. A minimum cumulative GPA of 3.00.
6. Successful completion of the capstone project.

COURSES

See inside front cover for symbol code.

Written permission from the Chair of the Physical Therapy program is required for non-physical therapy students to enroll in PTH/PHTH courses.

PHTH120 S (2)
Introduction to Physical Therapy

An introduction to the profession of physical therapy with an overview of duties and responsibilities physical therapists perform. Partially fulfills the clinical observation prerequisites for admission to the professional program. Students must have their own transportation for the clinical observation.

PHTH360 S (1-4)
Topics in _____

Selected topics in physical therapy. Permission of department chair required. Repeatable. Specific prerequisites may be required for some subject areas.

PHTH417 S ♦ (3)
Human Anatomy

Comprehensive study of human anatomy covering all systems of head, neck, trunk, and extremities. A solid morphological basis for a synthesis of anatomy, physiology, and clinical sciences provided. Dissection and identification of structures in the cadaver, and the study of charts, models, and prosected materials. Prerequisites: BIOL111, 112 or BIOL165, 166 or equivalent. See instructor for additional requirements. Corequisite: PTH427.

PHTH427 S S ♦ (1)
Human Anatomy Laboratory

Study of the prosected extremity, head and neck anatomy, and dissection of the abdominal and thoracic organ systems. Prerequisites: same as for PTH417. Corequisite: PTH417.

PHTH590 S (1-4)
Topics in _____

Selected topics in physical therapy. Permission of department chair required. Repeatable. Specific prerequisites may be required for some subject areas.

PHTH648 S (1-4)
Workshop

PHTH690 S (1-4)
Workshop

Individualized study and/or research in a specialized area under the guidance of an instructor. Permission from the department chair required prior to registration. Repeatable to 8 credits.

PTH400 ♦ (4)
Anatomy

A comprehensive study of human anatomy with emphasis on the nervous, skeletal, muscle, and circulatory systems. Introduction to basic embryology and its relation to anatomy and the clinical sciences concludes the course. Provides a solid morphological basis for a synthesis of anatomy, physiology, and the physical therapy clinical sciences. Corequisite: PTH410.

PTH410 ♦ (3)
Anatomy Laboratory

Dissection and identification of structures in the cadaver supplemented with the study of charts, models, prosected materials and

radiographs are used to identify anatomical landmarks and configurations. Corequisite: PTH400.

PTH415 ♦ (3)
PT Assessment Skills

Introduction to assessment principles and examination skills utilized in all areas of physical therapy. The *Guide to Physical Therapy Practice* is referenced for the basic skills required in the assessment, intervention and documentation guidelines. Corequisite: PTH425.

PTH416 ♦ (3)
Pathokinesiology

The study of human movement including an introduction to the basic concepts of biomechanics with an emphasis on human joint/muscle structures and function, advancing to analysis of body mechanics, normal gait analysis, and pathological movement analysis. Joint abnormalities will be identified using radiographs, related to the resultant movement dysfunction. Prerequisites: PTH400 and 410. Corequisite: PTH426.

PTH418 ♦ (2)
General Medicine

Clinical techniques applied to the examination, evaluation, treatment, and discharge planning of patients in general medical and acute-care. Emphasis on physical therapy intervention with relevant factors, management of pain and physical complications during medical treatment, and examination and treatment of special populations including wound and burn care. Corequisite: PTH428.

PTH420 ♦ (3)
Therapeutic Interventions

Basic principles, physiologic effects, indications and contraindications, application and usage of equipment, and intervention rationale for hydrotherapy, thermal agents, wound care, massage, electrotherapy and mechanotherapy (traction) and other therapeutic interventions. Corequisite: PTH430.

PTH425 ♦ (3)
PT Assessment Skills Laboratory

Basic examination skills including surface palpation of specific underlying muscle and bone structures, joint motion (goniometry), manual procedures for testing muscle strength sensation, vital signs, limb girth and volumetric measurement will be practiced. Clinical application in basic physical therapy care procedures will be introduced. Corequisite: PTH415.

PTH426 ♦ (2)
Pathokinesiology Laboratory

Biomechanical, and observational analysis, of normal and abnormal human movement. Integration of basic examination skills with gait and movement analysis. Prerequisites: PTH400 and 410. Coerequisite: PTH416.

PTH428 ♦ (1)
General Medicine Laboratory

Practice in assessment modified for the acute-care environment. Applications include home-and work-place evaluation for architectural barriers, functional evaluation tools, casting, and modification of treatment for acute care including goal setting and professional note writing. Corequisite: PTH418.

PTH430 ♦ (2)
Therapeutic Interventions Laboratory

Supervised practicum includes patient positioning and application of the therapy to obtain desired physiological response. Techniques of hydrotherapy, thermal agents, wound care, and

massage, as well as specific electrotherapy and mechanotherapy treatments and assessment of physiological responses to those treatments. Corequisite: PTH420.

PTH440 ♦ (3)
Pathophysiology I

Sequence studying disease processes affecting major body systems and the resulting anatomical and pathophysiological changes. Clinical presentations and pharmacological treatment of patients with those disease processes are presented, as well as diagnostic tests and laboratory values used to identify pathological conditions. Prerequisites: PTH400 and 410.

PTH445 ♦ (2)
Neuroscience

Basic anatomy and functions of the central and peripheral nervous systems and their related structures. Pathways of the central and peripheral nervous system are examined along with a detailed study of each of the 12 pairs of cranial nerves. Prerequisites: PTH400 and 410. Corequisite: PTH455.

PTH450 ♦ (1)
Neurology of Motor Control

An introduction to the function and interaction of the primary areas of the nervous system involved in controlling human movement, including the cortex, spinal cord, peripheral receptor system, basal ganglia, cerebellum, and the vestibular systems. Students are introduced to terminology and concepts associated with both normal function and pathology in these areas.

PTH455 ♦ (1)
Neuroscience Laboratory

Study of the projected central and peripheral nervous tissues, models, and charts. Imaging will be used to compare normal to abnormal CNS presentation. Prerequisites: PTH400 and 410. Corequisite: PTH445.

PTH457 ♦ (2)
Orthopedic Medicine

Medical lectures covering selected topics in orthopedics, including common orthopedic diseases and the use of diagnostic testing and imaging in the orthopedic field.

PTH460 ♦ (2)
Topics in Comparative Religion

This course surveys the major religious traditions of the world. Study includes an overview of origins; major philosophical and theological underpinnings; typical aspects of worship and ethics; and major social, cultural, and political influences. Study is done from a consciously Christian framework.

PTH495 (1–4)
Independent Study/Readings/Research/Projects

Permission of department chair required prior to registration for all independent work. Repeatable to 8 credits.

PTH500 (2)
Doctoral Colloquium

A degree orientation which will include portfolio development and assessment, development of the degree contract, usage of James White Library system, and introduction to the *Guide to Physical Therapy Practice*.

PTH507 (3)
Applied Clinical Anatomy & Kinesiology

Lecture/lab course studying regional anatomy and biomechanics as they relate to normal movement and the potential development

of movement dysfunctions. Correlations between pathomechanics, clinical presentation of pathology and decision making for therapeutic interventions will be drawn.

PTH536 (3)
NAIOMT Level I: Introduction to Fundamentals of Orthopedic Manual Therapy & Differential Diagnosis

Appropriate skills in basic and objective selective tissue examination necessary for generating a provisional differential diagnosis of spinal dysfunction. Signs, symptoms, pathology, and management of common spinal pathologies are reviewed. Selective tissue tensioning techniques for the peripheral joints are introduced. Cyriax's principles are presented.

PTH537 (3)
NAIOMT Level II: Intermediate Upper Quadrant

A comprehensive biomechanical and anatomical review of the upper thoracic, upper and lower cervical spine, shoulder, elbow, wrist, and hand. Specific biomechanical assessment of each area is taught along with appropriate and effective treatment techniques for common injuries and mechanical dysfunctions.

PTH538 (3)
NAIOMT Level II: Intermediate Lower Quadrant

A comprehensive biomechanical and anatomical review of the lower thoracic and lumbar spines, the hip, knee, ankle, and foot. Specific biomechanical assessment of each area is taught along with appropriate and effective treatment techniques for common injuries and dysfunctions.

PTH540 (2)
Pathophysiology II

Sequence studying disease processes affecting major body systems and the resulting anatomical and pathophysiological changes. Clinical presentations and pharmacological treatment of patients with those disease processes considered, as well as diagnostic tests and laboratory values used to identify pathological conditions. Prerequisites: PTH400 and 410.

PTH545 (3)
Advanced Clinical Physiology

The review of human physiological function of the major body systems with clinical application to musculoskeletal, cardiovascular and pulmonary conditions. Detailed information on exercise physiology will be discussed along with clinical applications among patients with compromised health.

PTH546 (3)
NAIOMT Level III: Advanced Upper Quadrant

Builds on the techniques learned in Level II and helps the student understand the kinetic chain interrelationships of the upper quadrant. Integrates information generated in the assessment to understand how remote dysfunctions can be casual or contributory. Advanced techniques are demonstrated along with new material on temporo-mandibular-joint material and peripheral manipulation skills. Prerequisite: PTH537.

PTH547 (3)
NAIOMT Level III: Advanced Lower Quadrant

Builds on the techniques learned in Level II and helps the student understand the kinetic chain interrelationships in the lower quadrant. Presents advanced biomechanical tests and treatment and includes the sacroiliac and pubic joints. Discusses the integration of examination and treatment techniques. Prerequisite: PTH538.

- PTH548** (3)
NAIOMT Level IV: High Velocity Manipulation
 Instructs the student on the indications and contraindications, as well as the safe and effective application of spinal, pelvic, and costal manipulation techniques. Prerequisites: PTH546 and 547.
- PTH549** (3)
Principles of Contemporary Leadership
 Theory and application of complexity sciences to organizational management; exploration of key leadership roles and changing paradigms; presentation of methods to maximize personal and professional life.
- PTH550** (1–4)
NAIOMT Supervised Clinical Practice
 Using a 3-to-1 model, students will be required to do a minimum of 60 supervised clinical hours applying hands-on techniques with patients under the supervision of a certified NAIOMT clinical instructor, FAAOMPT, or other approved instructors. These hours can be split up into two 30-hour blocks, or other increments as agreed upon by the student and CI. No less than 15 hours can be registered for at any given time.
- PTH556** (2)
NAIOMT: Pelvic Girdle
 Lecture/lab course focused on detailed examination and treatment of the pelvic girdle. Emphasis is placed on a biomechanical model of testing and treating clinical dysfunction and pain.
- PTH557** (2)
NAIOMT: Thoracic Spine
 Lecture/lab course studying the thoracic spine as a source of spinal dysfunction. Emphasis is placed on a biomechanical model for detailed examination and treatment of the thoracic spine and costovertebral dysfunction.
- PTH558** (3)
NAIOMT: Post Motor Vehicle Accident Cervical Dysfunction
 Lecture/lab course focused on examination and treatment of the patient with cervical trauma following an MVA. Emphasis is placed on developing a safe, effective and progressive examination and treatment program based on anatomical, histological and biomechanical changes resulting from the MVA trauma.
- PTH589** (1–2)
Professional Seminar
- PTH590** (1–12)
Topics in _____
 Selected topics in physical therapy. Permission of department chair required. Repeatable. Specific prerequisites may be required for some subject areas.
- PTH601** (2)
Orthopedics I
 Presentation of fundamental physical therapy knowledge in the assessment and intervention of a patient with both acute and chronic conditions of the extremities. Screening of the cervical and lumbar spine prior to tests is covered, progressing to complete assessment and treatment of extremity joint pathologies. Diagnostic tests and results pertinent to the orthopedic patient are related to a physical therapy differential diagnosis. Corequisite: PTH611.
- PTH602** (2)
Orthopedics II
 A continuation of the presentation of information regarding orthopedic pathology of the spine with emphasis on treatment techniques for the different pathologies from a physician and physical therapist's perspective. A decision making model focusing on a differential diagnosis is incorporated throughout the course. Corequisite: PTH612.
- PTH610** (2)
Therapeutic Exercise
 Examines the systemic responses to exercise as related to both an acute nature and in response to training. Specific pathological conditions are discussed in relation to exercise testing and prescription, and a clinical decision making process is presented for working with additional pathological conditions. Corequisite: PTH620.
- PTH611** (2)
Orthopedics I Laboratory
 Clinical application and practice in the special techniques to assess and treat acute and chronic orthopedic pathologies of the extremities and spine. Corequisite: PTH601.
- PTH612** (2)
Orthopedics II Laboratory
 Designed for practice of the special techniques required in the assessment of intervention of acute and chronic orthopedic pathologies of the cervical, thoracic, and lumbar spine. Corequisite: PTH602.
- PTH615** (2)
Clinical Pharmacology
 Develops a non-prescriptive knowledge of specific medications including indications, contraindications, precautions, adverse reactions, and dosage, especially as related to physiological effects of physical therapy interventions.
- PTH618** (2)
Sports Physical Therapy
 Understanding physical therapy management of athletes: topics unique to sports medicine include preparticipation screening exams, field management of athletic injuries, designing comprehensive rehabilitation and conditioning programs, taping techniques, equipment fitting, biomechanics of the upper extremity and lower extremity in sports, specifically related to evaluation and treatment of common athletic injuries.
- PTH620** (1)
Therapeutic Exercise Laboratory
 Practical demonstration and experience with responses to exercise, testing procedures, and exercise prescription, focusing on activities appropriate for clinical situations. Tests and interventions noted in the *Physical Therapy Guide to Practice* are highlighted. Corequisite: PTH610.
- PTH621** (2)
Scholarly Inquiry and Dissemination
 Introduction to the principles and practice of research, including designs, ethics, hypothesis testing and critical evaluation of clinical literature. Preparation and development of a graduate research proposal is interwoven throughout this course.
- PTH622** (1)
Research Statistics
 Fundamental procedures in collecting, summarizing, presenting, analyzing, and interpreting statistical data. Statistical tests applied to medical specialties. Corequisite: PTH632.

- PTH625** (1)
Cardiopulmonary
Lectures covering selected topics in cardiopulmonary medicine, focusing on clinical presentation, diagnostic tests, and medical and physical therapy interventions. Corequisite: PTH635.
- PTH627** (1)
Orthotics and Prosthetics
Prosthetic management of upper- and lower-limb amputee, orthotic management of patients with disabilities requiring orthotic intervention, and application/management of orthotic-traction devices. Corequisite: PTH637.
- PTH630** (2)
Clinical Research
Introduces the student to basic concepts of biostatistics and research design and the formulation of evidence based practice theories.
- PTH632** (1)
Research Statistics Laboratory
Practice in the computation of statistical data using appropriate formulas. Practical applications of techniques in research and statistical computations including probability, normal distribution, Chi Square, correlations, and linear regressions. Corequisite: PTH622.
- PTH635** (1)
Cardiopulmonary Laboratory
Emphasis on physical therapy assessment and intervention with cardiac and pulmonary patients. Practice of relevant techniques, such as stress testing, percussion, pulmonary function tests and breathing techniques, as well as other techniques identified in the *Physical Therapy Guide to Practice*. Corequisite: PTH625.
- PTH637** (1)
Orthotics and Prosthetics Laboratory
Practice of the physical therapy techniques required in the application of orthotic and prosthetic devices. Special attention given to gait and function. Selected topics such as wheelchair modifications, miscellaneous ortho-rehab apparatus, and other assistive/adaptive devices included. Corequisite: PTH627.
- PTH640** (2)
Pediatrics
An overview of embryologic development, followed by normal infant/child development to 5 years of age with an emphasis on motor development. Identification of assessment techniques for infants and children with normal and abnormal development. Description of various pediatric pathologies encountered in physical therapy with appropriate corresponding assessment and treatment approaches. Corequisite: PTH650.
- PTH645** (4)
Physical Therapy Administration and Leadership
A study of the organizational structures, operations, and financing of healthcare delivery institutions and an examination of the organization and interrelationship of their professional and support elements. Application of current health care management strategies and theory are related to the acute-care facility and independent practice.
- PTH646** (2–3)
Spirituality in Healthcare
A discussion of spiritual values from a Christian perspective, how faith and spirituality facilitate the healing process, and how these can be incorporated into patient care. Attention will be given to discerning and addressing the spiritual needs of patients/clients, family members, and ancillary medical staff in a professional environment.
- PTH647** (2)
Differential Diagnosis
Analysis of the decision making process, with special focus on clinical guidelines, *Physical Therapy Guide to Practice*, and differential diagnosis. Differential diagnosis is addressed through comparison of systemic signs and symptoms, as well as appropriate diagnostic tests which may indicate involvement of a problem outside of the scope of PT practice.
- PHTH648** S (1–4)
Workshop
- PTH650** (2)
Pediatrics Laboratory
Practice of physical therapy assessment of the infant/child that address different developmental domains. Practice in the special techniques required in assessment and treatment of pediatric patients diagnosed with selected pathologies. Introduces current treatment approaches, such as Neurodevelopmental Treatment (NDT), with their effects on treatment goals. Corequisite: PTH640.
- PTH651** (2)
Neurology I
Review of basic neurophysiological mechanisms specific to nervous system dysfunction, related to clinical concepts in treatment of conditions affecting the nervous system, such as spinal cord injury, head injury, stroke, and selected peripheral pathologies. Emphasis on comparing and contrasting facilitation techniques. Corequisite: PTH661.
- PTH652** (2)
Neurology II
Continuation of PTH651 Neurology I, focusing on assessment and intervention with selected neurologic conditions. Common treatment techniques are compared with rationale for use of each. Prerequisite: PTH651. Corequisite: PTH662.
- PTH661** (2)
Neurology I Laboratory
Clinical application, rehabilitation practice, and techniques applied to nervous system dysfunction. Intervention techniques for conditions affecting the nervous system, such as spinal cord injury, head injury, stroke, and selected peripheral pathologies. Corequisite: PTH651.
- PTH662** (2)
Neurology II Laboratory
Clinical application, rehabilitation practice, and techniques applied to basic physiological and neurophysiological mechanisms specific to nervous system dysfunction. Focus on techniques appropriate for use with neurologic patients and evaluation of patient response to treatment. Prerequisite: PTH661. Corequisite: PTH652.
- PTH680** (2)
Clinical Practicum
Practice of the knowledge and skills developed in the classroom and laboratory in a patient-care setting. This practicum consists of 4 weeks full-time physical therapy experience in clinical facilities affiliated with the university. Repeatable.
- PTH690** (1–4)
Independent Study
Individualized study and/or research in a specialized area under

the guidance of an instructor. Permission from the department chair required prior to registration. Repeatable to 8 credits.

PTH697 (2)
Independent Learning Contract

The student, working with their advisor and following degree/course guidelines, will develop an independent 40-hour learning contract with a qualified clinical specialist to facilitate intensive focused clinical training in a field of study of their choosing.

PTH710 (2)
Advanced Concepts in Neurology

Advanced education in theory and clinical practice in the treatment of neurological dysfunction. Theories and clinical areas covered may include Neuro Developmental Technique (NDT), Motor Relearning Program (MRP), and other selected approaches. Focuses primarily on helping the student achieve advanced skills in transition from theory to clinical practice. Corequisite: PTH720.

PTH715 (2)
Advanced Concepts in Pediatrics

Advanced assessment and intervention strategies for the pediatric patient. Corequisite: PTH725.

PTH717 (2)
Advanced Concepts in Aquatic & Alternative Medicine

Advanced aquatic therapy program design and intervention and an overview of complementary therapies focusing on physical therapy evaluation and intervention. Corequisite: PTH727.

PTH718 (3)
Clinical Screening & Differential Diagnosis

Knowledge and clinical skills designed for screening patients for medical conditions. Differential diagnosis is addressed through comparison of systematic signs and symptoms. Appropriate diagnostic tests which may indicate involvement of a problem outside the scope of PT practice are addressed. Enhances professional communication with other healthcare practitioners included in the referral process.

PTH720 (1)
Advanced Concepts in Neurology Laboratory

Clinical application, rehabilitation practice, and techniques applied to advanced clinical practice in the treatment of neurological dysfunction. Theories and clinical areas covered may include Neuro Developmental Technique (NDT), Motor Relearning Program (MRP), and other selected approaches. Corequisite: PTH710.

PTH725 (1)
Advanced Concepts in Pediatrics Laboratory

Practice and application of skills required in working with orthopedic and neurologically involved pediatric patients as well as pediatric patients that show developmental risk factors and/or delays. Corequisite: PTH715.

PTH726 (2)
Geriatrics

Study of the unique characteristics of the geriatric patient, especially the physiological, psychological and social aspects, related to special needs in the physical therapy assessment, plan of care, and intervention.

PTH727 (1)
Advanced Concepts in Aquatic & Alternative Medicine Laboratory

Designed for the clinical application and practice of special techniques in complementary aquatic and therapies. Corequisite: PTH717.

PTH728 (1)
Christian Finance Seminar

This course emphasizes the principles of Christian stewardship in everyday life. It addresses stewardship not only as it relates to finances but also to other human resources such as time, and talent. It will also include the elements of family budgeting and investing.

PTH730 (2)
Medical Diagnostics

Addresses imaging, body chemistry values and data derived from musculoskeletal, neurologic, vascular, cardiac and pulmonary testing with the purpose of understanding the disease process. Application of knowledge will determine differential diagnoses.

PTH735 (2)
Advanced Concepts in Industrial Medicine

A broad overview of occupational medicine with emphasis on assessment and intervention procedures for industrial rehabilitation. An instructional block included on the prevention of work-related injuries with an evaluation of the workplace and the development of appropriate job descriptions. Corequisite: PTH745.

PTH736 (3)
Psychosocial Issues in Healthcare

An introduction to psychosocial responses to illness and disability, especially the interpersonal relationships between the therapist, the family and the patient. Common psychiatric disorders are discussed along with their clinical diagnosis, treatment regimes, projected outcomes and methods for handling these responses in clinical situations.

PTH737 (2)
Advanced Concepts in Sports Medicine and Orthopedics

Advanced understanding of orthopedic pathology of the spine and extremity joints, with attention to athletic injuries of these areas. Measures covered include the pre-participation physical exam, designing conditioning programs, taping, equipment fitting, advanced first aid for evaluating and treating field injuries, and other selected orthopedic pathology. Corequisite: PTH747.

PTH739 (2)
Advanced Concepts in Women's Health

An advanced understanding of issues relating to the physical therapy assessment and intervention of women's health concerns. Clinical areas covered include pregnancy, menopause, post-mastectomy and hysterectomy rehabilitation. Corequisite: PTH749.

PTH745 (1)
Advanced Concepts in Industrial Medicine Laboratory

Observation, demonstration, and practice in the assessment, intervention, and patient instruction procedures relating to occupational medicine. Corequisite: PTH735.

PTH747 (1)
Advanced Concepts in Sports Medicine and Orthopedics Laboratory

Practice in advanced examination and intervention procedures for orthopedic pathology with special emphasis on athletic injuries. Practice of different exercise regimens and taping techniques. Corequisite: PTH737.

PTH748 (1-2)
Educational Techniques for Health Care Professionals

Examines and applies educational theory to skills utilized by the physical therapist in the classroom, community, and clinical facility. Topics include the educational role of the physical therapist,

the taxonomies of learning, learning styles, multiple intelligence, and educational technology.

PTH749 (1)***Advanced Concepts in Women's Health Laboratory***

Advanced practice and application of clinical skills required in the physical therapy assessment and intervention of women's health. Corequisite: PTH739.

PTH750 (2)***Professional Communication & Consulting***

An introduction to the integration of the physical therapist as consultant. Discussion will include applying physical therapy consultation services to individuals, business, schools, government agencies and/or other organizations.

PTH760 (2)***Applications in Clinical Research***

Information presented on how to develop and present a publishable quality case study. It also includes the actual practice of doing an outcomes study in the clinical environment.

PTH765 (1-2)***Ethical & Legal Issues in Healthcare***

Contemporary ethical issues are explored, including the relationships among peers, superiors, subordinates, institutions, clients, and patients. Illustrations include actual cases related to Christian biblical principles.

PTH768 (1)***Professional Compendium***

Summarization of previous or added learning experiences relative to contemporary issues in physical therapy. An overview of the new graduate's role and responsibility to his/her patients and their families, employer, and community in the expanding physical therapy profession.

PTH788 (0)***Research Project Continuation***

Non-package, reduced tuition rate applies.

PTH798 (1-10)***Capstone Experience***

Serves as an essential outcome component to augment the professional development and new learning that occurs in didactic course work of the postprofessional doctoral degree and demonstrates the ability of the DPT/DScPT to make significant contributions to the profession and/or serve as a change agent in the field of physical therapy.

PTH799 (1-3)***Research Project (topic)***

Provides students with guidelines and supervision for data collection, analysis, capstone project preparation and oral presentation.

PTH880 (1)***PT Seminar***

Preparation of a personal portfolio, assessment of the clinical experiences and preparation for professional licensure.

PTH881, 882, 883, 884 (4, 4, 5, 5)***Clinical Affiliation I, II, III, IV***

Advanced full-time clinical experience (8-10 weeks each) in a variety of professional practice settings. One of the affiliations must be in outpatient orthopedics, inpatient, and a neurology setting. Thirty-six to forty hours per week. May be repeated.

PHYSICS

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Faculty

Margarita C. K. Mattingly, *Chair*
Gary W. Burdick
Mickey D. Kutzner
Tiffany Z. Summerscales
Stephen C. Thorman

Emeriti

Robert E. Kingman
Bruce E. Lee
S. Clark Rowland

Academic Programs	Credits
BS: Physics	40
BS: Biophysics	40
Physics as a Second Major	30
Minor in Physics	20

Physics describes the world in terms of matter and energy and relates the many facets of its phenomena in terms of fundamental law. Its scope includes systems that range in size from the sub-nuclear to the entire cosmos.

A major in physics supports and enhances professional careers in engineering, the life sciences, the physical sciences, and similar areas.

A major in biophysics prepares the graduate for advanced studies in medical and bioengineering fields. Both physics programs prepare the graduate for a career in secondary teaching.

A *second major in physics* is an add-on major that complements other majors without incurring additional general education requirements. It strengthens and expands marketability and interdisciplinary opportunities.

Physics majors desiring secondary-teaching certification should also consult with the School of Education.

UNDERGRADUATE PROGRAMS

BS: Physics—40

Major Requirements: PHYS241, 242, 271, 272, 277, 377, 411, 430, 431, 477, 481, 495 plus an additional 12 credits numbered 300 and above.

Cognate Courses: MATH141, 142, 215, 240, 286; CHEM131, 132; and CPTR125 (FORTRAN or C++) or CPTR151.

Physics majors desiring secondary-teaching certification should also consult with the School of Education.

Recommended Electives: ELCT141, 142, TCED250.

BS: Biophysics—40

Offered by the biology and physics departments

BIOL165, 166, 371; 372 or BCHM421*; PHYS241, 242, 271, 272, 277, 377, 411, 416, 430 or CHEM431 and 441, PHYS431, 495