
Doctor of Physical Therapy Division



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The Profession of Physical Therapy

Doctors of Physical Therapy (DPT) apply the knowledge of the basic sciences to the prevention and treatment of movement dysfunction resulting from disease or injury. The physical therapist screens, examines, evaluates, diagnoses, prognoses, and provides interventions across the life span. Patient interventions are focused on prevention of dysfunction, relief of pain, improvement of strength, endurance, flexibility, coordination, and joint range of motion in order to maximize functional potential. The variety of settings in which a physical therapist may work includes hospitals, outpatient clinics, schools, skilled nursing facilities, rehabilitation centers, sports facilities, home care agencies, and corporate businesses. With experience, additional education, and board certification, the physical therapist may choose to specialize in orthopaedics, pediatrics, neurology, cardiopulmonary, sports physical therapy, clinical electrophysiology, women's health, and geriatrics. Beyond clinical practice, physical therapists may also pursue roles in education, research, and administration.

Mission Statement of the Doctor of Physical Therapy Division

The mission of the Doctor of Physical Therapy Division is to prepare Doctors of Physical Therapy, who by virtue of their critical thinking ability, clinical skills, diagnostic competence, ethical standards, and moral character are recognized experts in the diagnosis and management of neuromusculoskeletal function across the continuum of care, and who will serve their patients as primary clinical care practitioners, promoting the optimum health and function of their clients and society.

By pursuing this mission with vision and integrity, these leaders in the profession will seek to engage the mind, elevate the spirit, and stimulate the highest effort of all who are associated with the Doctor of Physical Therapy Division through education, practice, and research.

Doctor of Physical Therapy Curriculum

The Duke University Medical Center Doctor of Physical Therapy curriculum is a graduate professional degree program for entry into the profession of physical therapy. Upon successful completion of both didactic and clinical components of the curriculum, the student is awarded the Doctor of Physical Therapy (DPT) degree. The three year full-time program, located in the medical center, provides a comprehensive foundation in the art and science of physical therapy, preparing graduates to serve as primary clinical care practitioners for patients with neuromusculoskeletal dysfunction, throughout the continuum of care. The DPT program at Duke University has received full accreditation status from the Commission on Accreditation of Physical Therapy Education of the American Physical Therapy Association, and has offered an accredited educational program for physical therapists since its inception in 1943.

Faculty

Chief: J. K. Richardson, PT, PhD, OCS
Director of Graduate Studies: Daniel E. Erb, PT, PhD
L. Case, PT, MS, PCS; C. Cook, PT, MBA, PhD, OCS, R. Clendaniel, PT, PhD; D. Dore, EdD, PT, MPA; C. Figuers, PT, EdD; J. Gwyer, PT, PhD; E. Hegedus, PT, DPT, OCS; K. Johnson, MS; C. Odom, PT, DPT, ATC; A. Pastva, PT, PhD; J. Purser, PT, PhD; R. Richardson, PT, MEd; E. Ross, PT, MMS; K. Shipp, PT, PhD; A. Taylor, PhD; L. White, PhD; T. Worrell, PT, EdD, SCS, ATC, FACSM.

Program of Study. The curriculum is comprised of 126 credits of academic work, completed over eight academic semesters, requiring 33 months of full-time attendance. Course work includes didactic courses in basic sciences, clinical sciences, patient management, research, administration, education, and two five-month clinical internships. The clinical internships are conducted in selected practice sites in North Carolina and across the country. Two elective courses and a required research project provide opportunity for the student to pursue areas of physical therapy throughout the entire scope of practice.

Curriculum. The curriculum is presented in an integrated format, such that successful completion of all courses in each semester is required prior to progressing on to the next semester.

Year One

Fall Semester

PT-D-301. Human and Clinical Anatomy	5 credits
PT-D-302. Surface Anatomy - Palpation	1 credit
PT-D-303. Embryology, Histology, Pathology and Tissue Biomechanics I	3 credits
PT-D-304. Normal Human Development	2 credits
PT-D-305. Physical Therapist Interventions I	3 credits
PT-D-306. Professional Development Seminar	2 credits
PT-D-307. Movement Sciences I/Biomechanics	3 credits
PT-D-308. Clinical Experience I	1 credit
Total	20 credits

Spring Semester

PT-D-311. Neurosciences	4 credits
PT-D-312. Embryology, Histology, Pathology and Tissue Biomechanics II	3 credits
PT-D-313. Physical Therapist Interventions II	4 credits
PT-D-314. Integumentary Practice Management	2 credits
PT-D-315. Cardiopulmonary Practice Management	3 credits
PT-D-316. Clinical Examination, Evaluation, Diagnosis and Prognosis	3 credits
PT-D-317. Evidence-based Practice I	3 credits
PT-D-318. Clinical Experience II	1 credit
Total	23 credits

Summer Semester

PT-D-321. Movement Science II/Motor Control	2 credits
PT-D-322. Arthrological and Pathological Movement Science I	3 credits
PT-D-323. Diagnostic Imaging	3 credits
PT-D-324. Musculoskeletal Practice Management I	4 credits
PT-D-325. Medical Practice Management	3 credits
PT-D-326. Physical Therapist Interventions III	3 credits
PT-D-327. Patient/Client Management Seminar I	2 credits
PT-D-328. Clinical Internship I	1 credit
Total	21 credits

Year Two

Fall Semester

PT-D-402. Arthrological and Pathological Movement Science II	3 credits
PT-D-403. Musculoskeletal Practice Management II	4 credits
PT-D-404. Neurological Practice Management I	5 credits
PT-D-405. Evidence-based Practice II	3 credits
PT-D-406. Patient/Client Management Seminar II	2 credits
Total	17 credits

Spring Semester (8 weeks)

PT-D-411. Psychosocial Aspects of Care	2 credits
PT-D-412. Neurological Practice Management II	5 credits
PT-D-413. Educational Theory and Practice	2 credits
PT-D-414. Administration I	3 credits
PT-D-415. Patient/Client Management Seminar III	2 credits
Total	14 credits

Spring/Summer Semester (20 weeks)

PT-D-416. Clinical Internship II	4 credits
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Year Three

Fall Semester (8 weeks)

PT-D-501. Clinical Pharmacology and Nutrition	2 credits
PT-D-502. Administration II	3 credits
PT-D-503. Primary Care Practice	3 credits
PT-D-504. Practice Elective I	3 credits
PT-D-505. Practice Elective II	3 credits
Total	14 credits

Fall/Spring Semester (20 weeks)

PT-D-506. Clinical Internship III	4 credits
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Spring Semester (6 weeks)

PT-D-507. Professional Practice Development and Evaluation	2 credits
PT-D-508. Evidence-based Practice III	3 credits
PT-D-509. Health Promotion and Injury Prevention	3 credits
PT-D- 510 Portfolio	1 credit
Total	9 credits

In addition to the above courses, students must successfully complete written and practical comprehensive examinations as part of PT-D-507, and a research project as part of PT-D-508.

Program Policies and Grading Standards. Enrolled students should reference the *2007-2010 DPT Student Handbook* for detailed program policies. Graduate students in the Doctor of Physical Therapy degree program are participants in a professional educational program whose graduates assume positions of responsibility as primary clinical care practitioners in health practice. Accordingly, students are evaluated on their academic and clin-

ical performance and also on their interpersonal communication abilities, their appearance and professional conduct. [Deficiencies in any of these areas are brought to the student's attention in the form of a written evaluation, and failure to correct these performance issues may result in probation, suspension or expulsion from the program.]

Academic Progression and Requirements for Graduation. The faculty of the Doctor of Physical Therapy Division accept responsibility for monitoring the academic progress of each student enrolled in the program. The following policy describes the standards by which satisfactory academic progress will be assessed, the determination of academic standing, and the requirements for successful completion of the Doctor of Physical Therapy degree.

I. Standards of Academic Progress

A. Grades

1. Didactic Courses

For all didactic courses in the curriculum, the following grading system will be used:

A = 90 – 100 percent

B = 80 – 89 percent

C = 70 – 79 percent

F = 69 percent or below

I = Incomplete

2. Clinical Courses

For Clinical Education Experiences I and II (PT-D 308 and 318) and for the Clinical Internship I (PT-D 328), the following grading system will be used:

P = Pass

F = Fail

I = Incomplete

For the Clinical Internship II and III (PT-D 416 and PT-D 506), the following grading system will be used:

A = 90 – 100 percent

B = 80 – 89 percent

F = Fail

I = Incomplete

Clinical Internship II and III will be graded on the letter grade scale of *A* or *B*. Students must have a grade of *A* or *B* to successfully complete the Clinical Internship. A grade of *F* will result in the requirement to repeat the internship. Students may only repeat an unsuccessful internship one time. If the student is unsuccessful in the repeat attempt, they will receive a failing grade and will be dismissed from the program. The student may appeal their dismissal from the program by notifying the chief in writing, as to why they believe an appeal is warranted. Repeat residencies are scheduled at the discretion of the chief and academic coordinator of clinical education.

3. Incomplete Grades

A grade of *I* Incomplete is given when, at the time the grades are reported, some portion of the student's work in a course is lacking *for an acceptable reason, such as inability to attain sufficient mastery of the course content without additional study due to illness or impairment*. Incomplete grades may be given at the instructor's, chief's, or director of graduate studies' discretion, with the approval of the Committee on Academic Performance for the following reasons:

- A. Documented student illness that prevents the student from completing the required work in the semester in which the course is offered.
- B. Illness of the student's immediate family member(s), which prevents the student from completing the required work in the semester in which the course is offered.
- C. A student who selects alternative or additional unplanned learning experiences that will impede his/her ability to complete course work in the semester in which the course is offered. Examples of such opportunities include: acceptance of a Fulbright Grant, Rhodes scholarship, or other academic award, or participation in the Olympics or Pan American Games.
- D. A student who requires maternity or paternity leave or time to provide elder care.

A grade of Incomplete may not be given to a student for the sole purpose of providing additional time so the student may elevate a course grade. Instructors who elect to give a student an *I* grade are committing themselves to perform the additional instruction/evaluation required for the student to complete the course within one calendar year. *I* grades remain on the transcript with the earned grade added later.

The course instructor will determine the manner in which the *I* grade will be converted to an earned grade. The instructor who gives an *I* for a course specifies the date by which the student must have made up the Incomplete, but in no case will this exceed more than one calendar year from the date the course ended or prior to matriculation into a clinical internship. Incomplete grades which are not satisfied within one calendar year automatically become grades of *F*–Fail. If an extension to this time limit is required, an appeal in writing must be made to the chief just prior to expiration of the calendar year in which the Incomplete grade must be completed. When the faculty member certifies that an Incomplete has been satisfied, a passing grade is placed alongside the Incomplete on the permanent and official transcript.

If a student's grade in a course that contains specific subunits is passing, but one or more subunits have been failed, the student will receive a grade of *I* in the course and must complete remedial work in order to earn a passing grade in the course.

4. Failing Grades

- A. A grade of *F* Fail is recorded on the permanent record of a student by the Registrar upon submission by the faculty member that unsatisfactory work has been performed by the student. Failures will not be erased from the permanent record, and will result in immediate withdrawal from the Doctor of Physical Therapy Program. However, the student may appeal this withdrawal by indicating in writing to the chief (a) reasons why the student did not achieve minimum academic standards and (b) reasons why the student's immediate withdrawal should be changed. A student may continue to matriculate in courses until the decision of the appeal is determined. The chief will notify the student of the appeal decision in writing within three weeks of receipt of the appeal. All appeals must be mailed to the chief via United States Postal Service Certified Mail.
- B. Progression: Normally, all first year courses must be satisfactorily completed before a student may enroll in the second year courses, and all second year courses must be satisfactorily completed before a student may enroll in the third year courses. (When requested by

the student, altered sequences for students who require remediation may be considered for approval by the faculty, and the chief.)

II. Determination of Academic Standing

All students' records are reviewed periodically by the faculty, and each student is assigned to one of the following categories of Academic Standing.

A. Good Academic Standing

The student is considered to be in **Good Academic Standing** if they maintain an overall, cumulative, grade point average of 3.0 or higher, and “Pass” for Clinical Experiences or Clinical Internship I for all courses attempted. The student cannot receive less than a grade of *C* in any course attempted.

B. Academic Probation

Academic probation is an academic standing that indicates concern about the student's performance in the curriculum. By placing the student on academic probation, the student is notified of the faculty's concern regarding past performance. The student also is informed that future performance must improve or the student risks withdrawal from the program. In these instances, the director of Graduate Studies will notify the Registrar that the student is being placed on academic probation.

When a student is placed on academic probation, they remain in this academic standing until the student either improves their grade point average to an overall cumulative grade point average of 3.0 or better, or is withdrawn from the program. A student who is currently on Academic Probation must achieve a cumulative grade point average of 3.0 or better in the next consecutive semester or will be withdrawn from the program.

The director of Graduate Studies will notify the student that their performance will be evaluated at the end of each succeeding semester, and that future poor performance may occasion withdrawal from the program (see following section).

The faculty of the Doctor of Physical Therapy Division will use the following standards for assigning the status of academic probation.

1. A student will be considered to be on **Academic Probation** if their cumulative grade point average is 2.99 or less.
2. A student who successfully appeals a grade of *F* in one course in the curriculum will be considered to be on **Academic Probation**. (See Withdrawal below).

A student who has been placed on Academic Probation may require remedial work to rectify their weakness. Such remediation will be determined by the chief, advised by the faculty, and communicated to the student in writing by the director of Graduate Studies, and may entail additional costs for the student.

C. Withdrawal

A student who fails to demonstrate successful academic progress will be withdrawn from the program.

The faculty of the Doctor of Physical Therapy Division will use the following standards for withdrawing a student from the program.

1. A student will be asked to **Withdraw** following the attainment of a grade of *F* Failure in one course in the curriculum. The student may appeal this withdrawal as described under the section, “Failing Grades.”
2. A student who is currently on **Academic Probation** will be asked to **Withdraw** following the attainment of a cumulative grade point average of 2.99 or less in a second consecutive semester.

III. Appeals of Academic Status (Academic Probation or Withdrawal)

A student placed on Academic Probation or Withdrawn from the program may appeal by indicating in writing to the chief: (a) reasons why the student did not achieve minimum academic standards, and (b) reasons why the student's academic standing should be changed. Each appeal will be considered on its merit. Individual cases will not be considered as precedent. The chief will notify the student of the decision on the appeal in writing within three weeks of receipt of the appeal. All appeals must be mailed to the chief via United States Postal Service Certified Mail.

IV. Requirements for Graduation

A. Academic Standards for Graduation

The following standards must be met by the student to successfully complete the Doctor of Physical Therapy degree program.

1. Completion with a passing grade of a minimum of 126 units of course credit, including all required courses. This includes the successful completion of a research requirement and of all clinical education courses.
2. Passing of all Practical Examinations administered by the faculty.

B. Time Limits on Meeting Requirements for Graduation

1. The standard required length of study to complete the above-listed academic standards is eight continuous academic semesters of full-time work (including two summer terms), completed in 33 calendar months.

Under extraordinary conditions, a student may be permitted a time limit of two semesters of full or part-time enrollment beyond the standard required length of study to complete the program. The student must apply in writing for such consideration to the chief who will review each case.

2. The student is expected to make continuous and successful progress towards the requirements for graduation throughout the curriculum. The student must register for all required courses during each semester of the curriculum, and may carry into succeeding semesters no more than one *I* course grade. Under extraordinary circumstances, a student may apply for an exception to the typical pattern of progress towards degree requirements.

C. Incomplete Mastery of Content

1. If a student successfully appeals a grade of *F* in a course and is permitted to continue in the curriculum, the instructor is not required to provide individual remediation to the student. In this case, the only plan for remediation is for the student to retake the course in the semester in which it is normally given. The student will bear all financial implications of repeated course work. All remediation efforts must be completed within the above-outlined time limits for completion of the program, or a grade of *F* Fail will remain on the student's permanent record.

Attendance and Excused Absences. Students are expected to attend all classes and clinical internship hours, and are excused only for illness or personal emergency. The chief may approve a student's written request for a Leave of Absence for personal, medical, or academic reasons, for a period not to exceed one year. Written notification of the approved time frame of the leave of absence to the student, the Registrar, and the director of financial aid will be provided. The student must provide written notification of their intent to return to the

program at least 90 days prior to the anticipated date of re-entry. The student requesting an extension beyond one calendar year may be required to apply for readmission to the program, and/or to repeat some or all course work. For purposes of deferring repayment of student loans during a school-approved leave of absence, federal regulations limit the leave to six months.

Prerequisites for Admission. Requirements for admission to the Doctor of Physical Therapy Division include a baccalaureate degree, completion of prerequisite courses, Graduate Record Examination (GRE) Aptitude Test scores from within the last five years, the filing of an application (including essays and reference letters), and upon invitation, a personal interview. The GRE must be taken no later than the November test date.

Prerequisite course work: 3 semester hours of biological sciences (recommended courses include embryology, histology, microbiology), 3 semester hours of cell biology or molecular biology, 3 semester hours of human anatomy, 3 semester hours of human physiology, 6 semester hours of chemistry, 6 semester hours of physics (including principles of light, heat, electricity, mechanics, and sound), 3 semester hours of statistics, 6 semester hours of psychology (recommended courses include abnormal psychology, child, or developmental psychology), and 9 semester hours of humanities/social sciences (recommended courses include scientific and technical writing, and social anthropology). Human anatomy and human physiology courses must be completed within five years of the date of the application. All prerequisite courses must be completed with a grade of C or better. No prerequisite credit can be given to courses showing a Pass/Fail grade. A baccalaureate degree in the natural sciences is not a requirement for admission; however, a background of coursework in the natural sciences is strongly recommended.

Application Procedures. Application materials are available from July through December 1 each year, and may be obtained by writing: Admissions Secretary, Duke University Medical Center, Doctor of Physical Therapy Division, DUMC, Box 3907, Durham, NC 27710, (919) 681-4380. The application and all supporting documents must be post-marked no later than December 1 of the year preceding admissions. The application must be received in the department within 14 days of the December 1 postmark. The application fee is \$75. An early application deadline of November 1 will require a reduced application fee of \$65. Fall semester transcripts containing any prerequisite course work must be submitted as soon as they are available. Only students for full-time study are accepted. State residence does not influence admissions policies or tuition costs.

Web-based application is available, and we encourage applicants to complete an electronic application, located at <http://dukehealth1.org/dpt/application.asp>.

Tuition and Expenses. The faculty of the Doctor of Physical Therapy Division practice a "need-blind admissions process," with adequate financial aid for those students with financial need. The tuition for the 126 credits of the program is budgeted in three annual payments of 42 credits/year. The approved costs will be available from the Office of Financial Aid in May prior to admissions in the fall. Detailed student budgets are provided for all interviewed applicants.

Financial Aid. Qualified applicants may be eligible for federal educational loan programs or institution-based loans. A small amount of need-based scholarship awards is available for selected matriculated students. Financial aid information is available for all interested applicants by contacting the Office of Financial Aid, Box 3067, Duke University Medical Center, Durham, NC, 27710, or at the School of Medicine's Office of Financial Aid website: <http://finaid.mc.duke.edu/>.

Courses of Instruction

PT-D-301. Human and Clinical Anatomy. This course is devoted to the study of regional gross structure and function of the human body. The emphasis is on the relationship between structure and function of the neuromusculoskeletal system and the clinical implications of dysfunction. The student is also introduced to clinical problem identification through discussion of the anatomical bases for somatic dysfunction. Credit: 5.

PT-D-302. Surface Anatomy -Palpation. This course is devoted to the study of surface anatomy and palpation of the human body. The emphasis is on the location of important regional and local bony and soft tissue structures, including bony landmarks, joint spaces, muscles, ligaments, bursae, nerves and vessels, and the demonstration of appropriate palpation techniques. This course is coordinated with PT-D 301, Human Clinical Anatomy. Credit: 1.

PT-D-303. Embryology, Histology, Pathology and Tissue Biomechanics I. This is the first of a two-semester/session course. The course covers topics of embryology from conception through birth, as well as tissue structure and major function of the cells and tissue of the body. Pathology and disease is integrated within the course. Diseases commonly seen in patients receiving physical therapy are presented. Body responses to injury and disease are traced from the cellular level to the systems level. Topics in this course include: structure and function of the cells and tissues of the body, tissue diversity, histology of major organs, basic cellular anatomy, developmental biology / embryology, cell structure, function, cell diversity and cell communication and pathology. The course also presents the basic science of tissue biomechanics, and the response of muscle, bone joints, and soft tissue to disease and injury. The normal repair process and the effects of physical therapist's interventions including rest, stress, stretch, resistance, immobilization and work are discussed. Complications and benefits of interventions, the effects of nutrition, aging, exercise and immobility are discussed. Credit: 3.

PT-D-304. Normal Human Development. This course covers human development from birth to death, including its physical, psychological, social, and economic aspects. Emphasis in the course is on physical development. The course highlights the diversity of development among individuals and cultures. Credit: 2.

PT-D-305. Physical Therapist Interventions I. In this course students will be introduced to a variety of basic physical therapy skills. Early observation, communication, teaching and safety procedures, including body mechanics and universal precautions, are covered. Emphasis is placed on psychomotor performance including transfers, gait training, positioning, bandaging, and basic patient handling skills. Medical terminology is introduced and vital signs assessment is taught. Basic, but complete, competencies in goniometry and Manual Muscle Testing are expected. Credit: 3.

PT-D-306. Professional Development Seminar. This course will orient the student to the role and function of the physical therapist in contemporary health care with an awareness of ethical principles, historical foundations of the profession, current health care issues, and health economics. The course introduces the patient management model in physical therapy including patient examination, evaluation, diagnosis, prognosis, intervention, and outcomes. It will include a discussion of practice policies, models of disability, models of clinical decision-making, and documentation. Students will develop initial skills in patient interviewing and note writing. Credit: 2.

PT-D-307. Movement Science I/Biomechanics. This course addresses basic concepts relating to the architectural design and function of synovial and non-synovial joints, the mor-

phology and function of skeletal muscle, observational joint and movement analysis, anthropometry, and biomechanical force systems. Free body diagrams as well as trigonometric and algebraic functions are used to solve biomechanical problems related to physical therapy practice. Emphasis is on static analysis of both stationary and moving bodies. Credit: 3.

PT-D-308. Clinical Experience I. This course will serve as the initial entry point into the clinical environment. A variety of patient types and settings will be observed during four full-day (eight hours) experiences. Emphasis will be placed on integrating didactic information and developing psychomotor skills in the clinical setting. Students will also be exposed to a variety of professional practice issues and roles of physical therapists. Licensed clinical and/or academic faculty will provide direct supervision of the students. The supervisory model for this experience will not exceed 4 students: 1 clinical instructor. Credit: 1.

PT-D-311. Neurosciences. This course covers the anatomy and physiology of the nervous system. The student is introduced to concepts and terminology. Detailed neuroanatomy of the peripheral and central nervous system is presented. The neurophysiological basis of motor control is addressed, including sensory and motor systems, memory, cognition, and neural plasticity. Lectures, laboratory exercises, and problem-solving sessions are included. Credit: 4.

PT-D-312. Embryology, Histology, Pathology and Tissue Biomechanics II. This is the first of a two-semester/session course. The course covers topics of embryology from conception through birth, as well as tissue structure and major function of the cells and tissue of the body. Pathology and disease is integrated within the course. Diseases commonly seen in patients receiving physical therapy are presented. Body responses to injury and disease are traced from the cellular level to the systems level. Topics in this course include: structure and function of the cells and tissues of the body, tissue diversity, histology of major organs, basic cellular anatomy, developmental biology / embryology, cell structure, function, cell diversity and cell communication and pathology. The course also presents the basic science of tissue biomechanics, and the response of muscle, bone joints, and soft tissue to disease and injury. The normal repair process and the effects of physical therapist's interventions including rest, stress, stretch, resistance, immobilization and work are discussed. Complications and benefits of interventions, the effects of nutrition, aging, exercise and immobility are discussed. Credit: 3.

PT-D-313. Physical Therapist Interventions II. This course covers strategies and techniques to manage pain, edema, loss of normal motion, tissue dysfunction, and weakness through direct interventions. Interventions include: strength training, stretching, soft tissue mobilization, and exercise training. The effects of exercise across the lifespan are discussed. Credit: 4.

PT-D-314. Integumentary Practice Management. This course will present the practice management model for patients with pathology or impairment of the integumentary system. The role of the physical therapist as a primary care practitioner in examination, evaluation, and intervention will be stressed. The continuum of impairment of functional limitation to disability will be presented. Credit: 2.

PT-D-315. Cardiopulmonary Practice Management. This course gives an overview of the related pathologies of the cardiovascular and pulmonary system, examination and evaluation procedures, diagnostic procedures, goal setting, interventions, and patient management. A major focus of this course is laboratory sessions applying cardiovascular and pulmonary evaluation and intervention procedures such as airway clearance and exercise testing. This course covers the principles of training, exercise, and health promotion related to the cardiovascular and pulmonary systems. Credit: 3.

PT-D-316. Clinical Examination, Evaluation, Diagnosis and Prognosis. This course gives students skill in observation, communication, gross screening of posture, gait, function, integument, neurological, and musculoskeletal status. Additionally, students acquire skill in specific examination of flexibility, joint range (goniometry), anthropometric measures, and muscle strength (MMT). This course further provides opportunity for students to integrate material in determining patient problems and establishing an initial plan of care. Credit: 3.

PT-D-317. Evidence-based Practice I. In this course, students will be introduced to the science of clinical reasoning in health care and physical therapy, and the integration of clinical reasoning and evidence-based practice will be developed. Students will then learn how to access knowledge for practice, and will learn the methods of scientific inquiry, including research theory, design, methods, and measurement. Students will read research literature weekly and participate in a critical appraisal of the selected research methods and the meaningfulness of the findings for clinical decisions. Credit: 3.

PT-D-318. Clinical Experience II. This course will continue to reinforce principles learned throughout the program to date. Under the guidance of licensed clinical faculty, students will integrate concepts, principles, and techniques with emphasis on interventions learned during the first spring semester. The structure of this phase of clinical education will consist of four full days in the clinic. The focus will be on the practice areas of cardio-pulmonary and integumentary care. Students will spend two consecutive days in each of the above practice areas where they can experience and learn how physical therapists function in these environments. The supervisory model for this experience will not exceed 3 students: 1 clinical instructor. Credit: 1.

PT-D-321. Movement Science II/Motor Control. Current concepts of motor control and motor learning are synthesized from multiple disciplines to provide a framework for physical therapy practice. Neurological mechanisms are examined and integrated with other physiological, psychological, and biomechanical contributions to movement and function. The role of task and environment in the control of movement is also analyzed. Credit: 2.

PT-D-322. Arthrological and Pathological Movement Science I. A critical examination of the morphology and function of the articulations of the axial skeleton and upper limb. Course content stresses normal musculoskeletal movement of each of the pertinent segments as well as the pathomechanics of selected trunk and upper limb musculoskeletal anomalies resulting from congenital malformations, bone and soft tissue injuries, or disease. The course exposes students to kinematic and kinetic analysis of selected movement patterns pertinent to clinical practice. Credit: 3.

PT-D-323. Diagnostic Imaging. The study of the principles, procedures, and interpretation of diagnostic imaging techniques. Primary emphasis will be on plain film radiography of musculoskeletal injuries and conditions with secondary emphasis on computerized tomography scans, magnetic resonance imaging, bone scans, myelograms, and other nuclear medicine procedures. Credit: 3.

PT-D-324. Musculoskeletal Practice Management I. This course is designed to expand the knowledge base of the student into the specialized area of Musculoskeletal Practice Management with emphasis on the cervical spine and upper extremities. Direct physical therapist intervention for patient examination, evaluation, diagnosis, prognosis, and intervention will be presented. Credit: 4.

PT-D-325. Medical Practice Management. This final physical therapist intervention course will cover strategies and techniques to manage pain, edema, loss of normal motion,

soft tissue dysfunction and weakness through direct interventions. Interventions include: basic exercise, soft tissue mobilization, relaxation, splinting and compression garments, athermal modalities, cryotherapy, deep thermal modalities, electrotherapeutic modalities, and hydrotherapy. Credit: 3.

PT-D-326. Physical Therapist Interventions III. This course introduces students to an evidence-based approach to the use of therapeutic physical agents; that is, the literature that supports or refutes the use of each physical agent will be discussed. An algorithm is presented to facilitate accurate classification of the patient's impairments and functional limitations. In addition, the role of pain and joint effusion in inhibition of function is presented. Specifically, students will learn and understand the scientific bases of commonly used therapeutic physical agents in physical therapy practice. The physiological effect of each therapeutic physical agent will be discussed and specific reading will be available. Laboratory sections will require students to demonstrate specific competencies in the use of the agents. Students will use a case-study format to demonstrate the competency of the material. Credit: 3.

PT-D-327. Patient/Client Management Seminar I. In this seminar course, students will expand on their ability to integrate knowledge from various content areas in the analysis of patient cases, and will further develop their skills in the integration of clinical reasoning and evidence-based practice. The seminar format will include presentation of written, video, computer, and live patient cases followed by discussion of diagnostic, prognostic, and intervention aspects of the case. Analysis and critique of cases will address the clinical and scientific information presented in each case, synthesis of the information, strength of the conclusions, areas needing further investigation, and issues regarding decision-making and intervention in the context of the current state of knowledge. An interdisciplinary format will be encouraged, with students required to attend and report back on 2-3 Medical Center Conferences / Grand Rounds as part of this course. Credit: 2.

PT-D-328. Clinical Internship I. This first, full-time clinical experience will consist of a four-week learning experience in an inpatient setting, including: acute care, subacute, or skilled nursing. The focus of the experience will be the development of psychomotor skills, professional behaviors, gross and specific examination, and intervention procedures and documentation skills. Exposure to the multiple roles of the physical therapist will be emphasized (e.g., administration, case management, consultation). The student will be supervised by a licensed physical therapist. The supervisory model for this experience will not exceed 2 students: 1 clinical instructor. Credit: 1.

PT-D-402. Arthrological and Pathological Movement Science II. The goal of this three-hour a week course is to learn and to understand the relationships of lower extremity Arthrology to the normal, impaired, and pathological gait patterns. The course is composed of the following sections: 1) Hip and SI Joints, 2) Knee Joint, 3) Ankle and Foot Joints, 4) Normal Gait, 5) Impaired and Pathological Gait Patterns. Specifically, sections 2-5 will consist of lecture. Students will be prepared to discuss specific unit objectives and reading assignments for clarification as needed in "Discussion Sessions." Students will assume an active role in the "Discussion Session," as the instructor facilitates problem-solving and clarifications if needed. Laboratory sessions will require students to demonstrate specific competencies. Students will analyze video tapes of normal, impaired and pathological gait patterns. Credit: 3.

PT-D-403. Musculoskeletal Practice Management II. This course is designed to expand the knowledge base of the student in the specialized area of Musculoskeletal Practice

Management with emphasis on the thoracic spine, lumbar spine, pelvis and lower extremities. Credit: 4.

PT-D-404. Neurologic Practice Management I. An introduction to management of children and adults with neuromuscular disorders is presented. Examination, evaluation, diagnosis, prognosis, and intervention are discussed. Peripheral neuromuscular (e.g., muscular dystrophy, brachial plexus injury) and spinal cord disorders (e.g., spinal cord injury, spinal bifida) are included. Credit: 5.

PT-D-405. Evidence-based Practice II. This course is comprised of two complementary sub-units. In the Analytical Basis of Inquiry sub-unit, students will learn the logic of hypothesis testing and specific statistical tests used for descriptive and inferential analysis of research data. Students will read research literature weekly and discuss the analytical approaches that support the research findings. In the Critical Appraisal of Evidence for Practice sub-unit, students will build on their knowledge of research methods and learn to critically appraise the evidence for physical therapy practice by: developing an answerable clinical question, identifying the best research evidence, and assessing the quality of the evidence. In addition, epidemiological statistics that enhance the understanding of diagnostic tests and treatment options will be covered. In both units, students will use statistical software to build skills in data analysis with practice data sets. Credit: 3.

PT-D-406. Patient/Client Management Seminar II. The goal of this two-hour a week seminar course is to learn the cognitive components and psychomotor skills required to perform a patient/client interview in the most efficient and valid manner. The class is divided into smaller group interactions and discussions. Students complete specific readings on the three components of the patient/client interview process. After students read the assignments, small group discussions will occur where the students actively explore the topics. Then, at the next class meeting, students practice the interviewing techniques while being video- or audio-taped. At the next class meeting, "Demonstration of Core Skills Lab," students demonstrate their mastery of the core skills practiced in the previous class while being video- or audio-taped. Verbal critiques from the professor and peers will be provided. The final and midterm examinations will each consist of a 15-minute video-taped interview of a patient with a written self-critique that provides strategies to improve the student's own performance. Credit: 2.

PT-D-411. Psychosocial Aspects of Care. In this course, students will survey the various factors affecting the patient, the family, and the physical therapist relationship in situations of chronic illness and loss. Students will increase skill in developing an effective helping relationship with other people. Experiential learning experiences and self-observation will be used to promote this development. Credit: 2.

PT-D-412. Neurological Practice Management II. The study of management of children and adults with neuromuscular disorders is continued with emphasis on more complex CNS and multisystem disorders. Examination, evaluation, diagnosis, prognosis, and intervention are discussed. Both concepts and skills are addressed. Acquired injuries (e.g., cerebrovascular disease, traumatic brain injury), degenerative disorders (e.g., Parkinson's disease, multiple sclerosis) and congenital disorders (e.g., cerebral palsy) are included. Credit: 5.

PT-D-413. Educational Theory and Practice. In this course, principles of teaching and learning will be introduced and applied to the health care setting. Students will learn to use a variety of teaching methods selected and developed for a specific audience. Students will formulate and implement a plan for facilitating personal behavioral change. Credit: 2.

PT-D-414. Administration I. The study of administrative styles in the healthcare delivery system. Emphasis on management analysis in professional settings of hospitals, long term care facilities, home care, private practice, and community-based programs as related to business operations, budget development, and personnel management. Credit: 3.

PT-D-415. Patient/Client Management Seminar III. In this course students will be introduced to the management of patients who require prosthetic or orthotic assistive devices. Students will complete readings outside of class and participate in problem-solving laboratories with patients who use these assistive devices. Additional case studies will be presented on patients with a variety of complex diagnoses, and students will analyze the clinical decisions that are crucial to each case. Credit: 2.

PT-D-416. Clinical Internship II. This 20-week clinical internship may occur in varied settings under the supervision of a selected and trained clinical instructor, and following a written curriculum. The required focus of this clinical experience will be in either the musculoskeletal or neuromuscular practice areas. Under supervision, students will learn skills in all components of the physical therapy practice management model, including conducting patient examinations and evaluations, establishing patient diagnoses and prognoses, conducting patient interventions, and measuring patient outcomes. When possible, students will experience patients in these practice patterns who are across the range of acute to chronic conditions. Students will practice all administrative aspects of their professional roles during these internships, and will learn the components of safe, ethical, and efficacious practice. Performance expectations will include safe and effective examination, evaluation, diagnosis, prognosis, intervention, and patient management skills. Students will complete a variety of learning experiences during this internship related to patient care, teaching, and research. The maximum supervisory ratio for this course will be 2 student interns: 1 clinical instructor. Credit: 4.

PT-D-501. Clinical Pharmacology and Nutrition. This course will introduce students to the basic principles of pharmacology and nutrition. Study of pharmacologic intervention and nutritional practices for patients commonly seen in physical therapy is included. Credit: 2.

PT-D-502. Administration II. The study of various aspects of the operations of a business. Personnel aspects to be studied are: interviewing, negotiating, hiring, training, promoting, and terminating personnel. Professional development and mentoring as related to quality practice will be emphasized. Business aspects will include development of new programs and services, problem-solving techniques, and quality improvement programs. Emphasis will be placed on customer service methodology. Credit: 3.

PT-D-503. Primary Care Practice. This course explores the related concepts of direct access to physical therapy care, autonomous/independent physical therapist practice, and physical therapists in the roles of point-of-entry or primary care providers. Examples of direct access physical therapist practice in the United States are covered as well as the legal, political, ethical, and liability issues surrounding the concept of direct access. This course is designed to allow the student to integrate the coursework and clinical experiences thus far in the curriculum in the context of the practice of physical therapy without physician referral. To that end, students apply the principles of screening for medical disease or conditions and decision-making regarding referral to a physician or another health care provider, when their examination and evaluation of a patient warrants this action via case examples and case presentations based on their own clinical experience. In addition, students are exposed to several complementary and alternative medicine (CAM) disciplines in order to increase their

understanding of what type of care the patient may be receiving when being treated by a CAM practitioner. Credit: 3.

PT-D-504/505. Practice Elective I and II. In these courses, students will choose two electives in which to deepen their knowledge base for practice. Practice electives will be offered in: pediatrics, geriatrics, orthopaedics, sports, cardiopulmonary, neurology, education, research, and administration. Credit: 3; 3.

PT-D-506. Clinical Internship III. This 20-week clinical internship may occur in varied settings under the supervision of selected and trained clinical instructors. The required focus of this clinical experience will be in either the musculoskeletal or neuromuscular practice areas, depending on the previously completed internship (PT-D-416). Under supervision, students will learn skills in all components of the physical therapy practice management model, including conducting patient examinations and evaluations, establishing patient diagnoses and prognoses, conducting patient interventions, and measuring patient outcomes. When possible, students will experience patients in these practice patterns who are across the range of acute to chronic conditions. Students will practice all administrative aspects of their professional roles during these internships and will learn the components of safe, ethical, and efficacious practice. Performance expectations will include safe and effective examination, evaluation, diagnosis, prognosis, intervention, and patient management skills. Students will complete a variety of learning experiences during this internship related to patient care, teaching, and research. The maximum supervisory ratio for this course will be 2 student interns: 1 clinical instructor. Credit: 4.

PT-D-507. Professional Practice Development and Evaluation. This course will require students to read about and discuss the concept of professionalism and interpret this concept for their own careers. Students will integrate the didactic, clinical, and research components of their experience in preceding course work, with the goal of evaluating their strengths and weaknesses for professional practice. Students will develop skills in self-assessment and planning for continuous professional development in five areas of physical therapy: teaching, research, administration, clinical practice, and service. Credit: 2.

PT-D-508. Evidence-based Practice III. This course will provide students the opportunity to finalize their research or scholarly project in written form and complete a formal research presentation of their project results. The role of critical inquiry and evidence-based practice will be discussed, including the development of practice policies and the use of evidence to support clinical decisions. Students will discuss strategies to change practice at the grass roots level and will develop a plan to foster their growth as scholarly practitioners. Credit: 3.

PT-D-509. Health Promotion and Injury Prevention. In this course, the student will learn to identify and assess the health needs of individuals, groups, and communities through screening for prevention of injury, developing wellness programs, and triaging appropriate patients for physical therapy. The student will be able to design and execute programs to promote optimal health by providing information or consultation on many aspects of health risks and disability. The student will be exposed to a multidisciplinary approach to health promotion and injury prevention and will participate in an existing program. Credit: 3.

PT-D-510. Portfolio. In this course, students will develop a professional development strategy/plan complete with goals, assessment tools, evaluation summary and professional development plan. This course offers a transcurricular learning experience that will be developed by the Doctor of Physical Therapy student throughout the three years of professional education, under the guidance of the academic advisor. Credit: 1.