School of Rehabilitation Sciences

3118 Health Sciences Building
757-683-4519
http://www.odu.edu/ptat

Steven Morrison, Chair
Martha Walker, Graduate Program Director

Doctor of Physical Therapy

The Doctor of Physical Therapy (http://www.odu.edu/ptat/curriculum/) degree is designed to professionally prepare students with the knowledge and clinical experiences to become licensed physical therapists who will enter general physical therapy practice. Upon graduation, students will be prepared to sit for licensure in any United States jurisdiction and practice in any health care setting where physical therapy is offered. The curriculum consists of 116 credit hours over a three-year period of time including summers. There are five full-time clinical internships totaling 40 weeks. The first three are completed over the second and third summers, with the final 16 weeks of clinical education occurring in the spring semester preceding graduation. A variety of clinical facilities locally, throughout Virginia, and the United States are used for internship experiences. Students are responsible for providing their own transportation to these off-campus clinical sites.

Requirements for Admission

Students are admitted to the program after completion of a bachelor’s degree and prerequisite course work. The application deadline is November 1 of each year, and the program begins the last week in June. Specific procedures for admission must be followed including the verification of meeting the technical standards. Admission into the program is competitive.

An application to the University and a separate application to the Physical Therapy Centralized Application Service (PTCAS) must be submitted. The PTCAS website will be open to applicants August 1 each year at www.PTCAS.org (http://www.PTCAS.org). Deadline for application submission is November 1 each year. Please follow the directions for application found at the PTCAS site.

A competitive admission process is used for determining acceptance. Excellent ODU students may qualify for guaranteed entry into the Doctor of Physical Therapy program. For criteria and additional information, please contact the Pre-Health Undergraduate Advisor from Exercise Science Physical Therapy program. For criteria and additional information, please contact the Pre-Health Undergraduate Advisor from Exercise Science.

Degree Requirements

Prerequisite courses include the following:

| STAT 130M | Elementary Statistics | 3 |
| BIOL 121N | General Biology I | 3 |
| BIOL 122N | General Biology I Lab | 1 |
| BIOL 123N | General Biology II | 3 |
| BIOL 124N | General Biology II Lab | 1 |
| BIOL 240 | Fundamentals of Anatomy and Physiology I | 4 |
| or BIOL 250 | Human Anatomy and Physiology I | |
| BIOL 241 | Fundamentals of Anatomy and Physiology II | 4 |
| or BIOL 251 | Human Anatomy and Physiology II | |
| Two semesters of Chemistry, including labs | 8 |
| Two semesters of Physics, including labs | 8 |
| Psychology | 3 |

An introductory course in Biomechanics or Kinesiology recommended but not required

Total Hours 38

Students are required to pass written and oral comprehensive examinations prior to graduation. Comprehensive examinations take place in the final academic semester prior to the terminal two clinical internships.

Curriculum Schedule

Year One

| Summer |
|---|---|
| PT 621 | Introduction to Physical Therapy | 2 |
| AT 691 | Gross Anatomy for the Rehabilitation Sciences | 6 |
| Fall |
| PT 627 | Theory and Practice I | 4 |
| PT 630 | Concepts in Histology for Physical Therapy | 1 |
| PT 634 | Clinical Sciences I | 3 |
| PT 640 | Patient Evaluation I | 3 |
| PT 655 | Clinical Problem Solving I | 2 |
| PT 665 | Biomechanics/Kinesiology I | 3 |
| PT 792 | Neuroscience I | 3 |
| Spring |
| PT 628 | Theory and Practice II | 4 |
| PT 635 | Clinical Sciences II | 3 |
| PT 641 | Patient Evaluation II | 3 |
| PT 656 | Clinical Problem Solving II | 2 |
| PT 666 | Biomechanics/Kinesiology II | 2 |
| PT 638 | Exercise Physiology | 2 |
| PT 793 | Neuroscience II | 3 |

Year Two

| Summer |
|---|---|
| PT 669 | Clinical Experience I | 4 |
| Fall |
| PT 810 | Scientific Inquiry I | 3 |
| PT 826 | Theory and Practice III | 4 |
| PT 836 | Clinical Sciences III | 3 |
| PT 842 | Patient Evaluation III | 3 |
| PT 857 | Clinical Problem Solving III | 2 |
| PT 884 | Clinical Teaching and Professional Communication | 3 |
| Spring |
| PT 822 | Scientific Inquiry II | 2 |
| PT 827 | Theory and Practice IV | 4 |
| PT 837 | Clinical Sciences IV | 3 |
| PT 858 | Clinical Problem Solving IV | 2 |
| PT 865 | Prosthetics and Orthotics | 3 |
| PT 881 | Inter-Professional Case Management for Special Populations | 3 |

Year Three

| Summer |
|---|---|
| PT 871 | Clinical Experience II | 4 |
| PT 872 | Clinical Experience III | 4 |
| Fall |
| PT 892 | Seminar in Inter-Professional Practice | 1 |
| PT 880 | Psychosocial Aspects of Patient Care | 2 |
| PT 882 | Practice Management | 3 |
| PT 896 | Topics in Physical Therapy II | 1 |
| PT 890 | Differential Diagnosis Seminar | 3 |
| PT 883 | Professional Issues in Physical Therapy | 2 |
| PT 891 | Seminar in Integrative Case Reports | 3 |
| Spring |
| PT 873 | Clinical Experience IV | 4 |
Master of Science in Athletic Training
PROFESSIONAL (ENTRY-LEVEL) DEGREE PROGRAM

Julie Cavallario, PhD, ATC

Graduate Program Director of Athletic Training
School of Physical Therapy and Athletic Training
2134A Health Sciences Building
757-683-4351

The Master of Science of Athletic Training degree program is a professional (entry-level) athletic training program that addresses the curricular content necessary for safe and proficient patient care. The curriculum addresses the six core competencies expected of all healthcare providers (evidence-based practice, quality improvement, use of healthcare informatics, patient-centered care, interprofessional education and collaborative practice, and professionalism). Classroom learning is enhanced through clinical education experiences which provide students with supervised hands-on learning opportunities necessary to develop the knowledge, skills, and abilities needed for autonomous clinical practice.

Admission and Entrance Requirements

Requirements for Admission:

Students are admitted to the program after completion of a bachelor’s degree and prerequisite course work. Courses for the program begin in May, during the first summer session, and continue for two calendar years. Specific procedures for admission must be followed including the verification of meeting the technical standards. Admission into the program is competitive.

An application to the University and a separate application to the Athletic Training Centralized Application Service (ATCAS) must be submitted. The ATCAS website will be open to applicants August 1 each year at https://atcas.liaisoncas.com/applicant-ux/#/login. Applications are reviewed beginning October 15 each year, and continue until all positions are filled. Please follow the directions for application found at the ATCAS site.

An applicant seeking admission to the MSAT degree program must have:

1. a bachelor’s degree and official transcripts from each undergraduate and graduate program attended at a regionally-accredited institution, or an equivalent foreign institution;
2. a minimum overall grade point average of 3.0 in undergraduate coursework.

Acceptance into the graduate school does not imply automatic acceptance into the athletic training program.

Other Application Requirements & Prerequisite courses:

The applicant will also need to submit documentation (via ATCAS) demonstrating the following requirements:

- Verification of 15 clock hours of observation with an athletic trainer;
- Three recommendations from professional or academic references;
- Documentation of current Emergency Cardiac Care (CPR/AED Certification) at the level of a Healthcare Professional; and
- Completion of the following prerequisites at Old Dominion University or another regionally-accredited institution (or international equivalent), with a minimum grade point average of 3.0 (the first five must be laboratory science courses):
  1. Biology
  2. Chemistry
  3. Physics
  4. Anatomy OR Anatomy & Physiology I
  5. Physiology OR Anatomy & Physiology II
  6. Biomechanics OR Kinesiology
  7. Psychology

Continuance and Exit Requirements

Students must meet all requirements for continuance as outlined in the graduate continuance policy for the University. Students completing the program of study must:

1. have an overall grade point average of 3.0;
2. have a GPA of 3.0 in the major;
3. demonstrate writing proficiency;
4. satisfy all course competencies;
5. pass comprehensive examinations;
6. complete a research project;
7. have an exit interview with the program director; and
8. file the necessary paperwork for graduation.

Curriculum

ATHLETIC TRAINING CORE COURSES (57 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT 602</td>
<td>Foundations of Sports Medicine for Healthcare Providers</td>
<td>3</td>
</tr>
<tr>
<td>AT 603</td>
<td>Clinical Examination and Patient Care-Spine &amp; Head</td>
<td>4</td>
</tr>
<tr>
<td>AT 604</td>
<td>Clinical Examination and Patient Care-Lower Extremity</td>
<td>4</td>
</tr>
<tr>
<td>AT 605</td>
<td>Clinical Examination and Patient Care-Upper Extremity</td>
<td>4</td>
</tr>
<tr>
<td>AT 607</td>
<td>Management of Medical Conditions for Healthcare Providers I</td>
<td>3</td>
</tr>
<tr>
<td>AT 612</td>
<td>Functional Movement for Healthcare Providers</td>
<td>3</td>
</tr>
<tr>
<td>AT 617</td>
<td>Management of Medical Conditions for Healthcare Providers II</td>
<td>3</td>
</tr>
<tr>
<td>AT 638</td>
<td>Documentation &amp; Quality Improvement for Healthcare Providers</td>
<td>3</td>
</tr>
<tr>
<td>AT 640</td>
<td>Clinical Medicine for Healthcare Providers I</td>
<td>3</td>
</tr>
<tr>
<td>AT 641</td>
<td>Clinical Medicine for Healthcare Providers II</td>
<td>3</td>
</tr>
<tr>
<td>AT 652</td>
<td>Pharmacology</td>
<td>3</td>
</tr>
<tr>
<td>AT 661</td>
<td>Behavioral Health in Sports Medicine</td>
<td>3</td>
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<tr>
<td>AT 664</td>
<td>Ethics in Healthcare</td>
<td>3</td>
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<tr>
<td>AT 673</td>
<td>Healthcare Administration and Policy</td>
<td>3</td>
</tr>
<tr>
<td>AT 686</td>
<td>Performance Enhancement in Sports Medicine</td>
<td>3</td>
</tr>
<tr>
<td>AT 687</td>
<td>Contemporary Issues in Athletic Training</td>
<td>2</td>
</tr>
<tr>
<td>AT 689</td>
<td>Professional Competence Assessment in Athletic Training</td>
<td>3</td>
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<tr>
<td>AT 691</td>
<td>Gross Anatomy for the Rehabilitation Sciences</td>
<td>6</td>
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</table>

RESEARCH CORE COURSES (5 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT 615</td>
<td>Research I</td>
<td>2</td>
</tr>
<tr>
<td>AT 625</td>
<td>Research II</td>
<td>1</td>
</tr>
<tr>
<td>AT 635</td>
<td>Research III</td>
<td>1</td>
</tr>
<tr>
<td>AT 645</td>
<td>Research IV</td>
<td>1</td>
</tr>
</tbody>
</table>

PRACTICUM CORE COURSES (7 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT 647</td>
<td>Interprofessional Clinical I</td>
<td>1</td>
</tr>
<tr>
<td>AT 648</td>
<td>Interprofessional Clinical II</td>
<td>1</td>
</tr>
<tr>
<td>AT 666</td>
<td>Athletic Training Practicum I</td>
<td>1</td>
</tr>
<tr>
<td>AT 667</td>
<td>Athletic Training Practicum II</td>
<td>1</td>
</tr>
<tr>
<td>AT 668</td>
<td>Athletic Training Practicum III</td>
<td>2</td>
</tr>
<tr>
<td>AT 669</td>
<td>Athletic Training Practicum IV</td>
<td>1</td>
</tr>
</tbody>
</table>
Total Program Credit Hours: 69

Center for Brain Research and Rehabilitation

The School of Physical Therapy and Athletic Training has opened a 3,800 square foot research facility (http://www.odu.edu/ptat/resources/) with a large gait/movement assessment area, a room for virtual reality and rehabilitation studies, a multipurpose room for neurologic testing, and office space for faculty and graduate students. A primary research focus relates to neuromechanical basis of human movement under healthy and pathological conditions, with more clinically oriented studies on methods to improve gait and function in people with neurologic impairments. Lab Director, Dr. Steven Morrison, is a leading researcher in identifying risks for falling and testing interventions to prevent falls. This research laboratory is designed for multidisciplinary use by faculty and graduate students in Athletic Training, Physical Therapy, Human Movement Sciences, and Electrical and Computer Engineering. Collaboration among disciplines and with the Virginia Modeling and Simulation Center (VMASC) allows us to participate in exciting research projects exploring new technology in rehabilitation.

ODU Monarch Physical Therapy

The School of Physical Therapy and Athletic Training, with support from the College of Health Sciences and Old Dominion University, operates a physical therapy clinic on the ODU campus. It is located at 1015 West 47th Street. To contact them, call (757) 683-7041. The clinic provides service to ODU faculty, staff and students as well as the neighboring community. It also serves as a site for students to learn to apply assessment, decision-making, and treatment skills. In addition, clinical research studies coordinated with the Center for Brain Research and Rehabilitation are conducted at the clinic.

Ph.D. in Kinesiology and Rehabilitation

Daniel Russell, Graduate Program Director

The Ph.D. in Kinesiology and Rehabilitation is designed for kinesiologists and rehabilitation professionals (athletic trainers, occupational therapists, physical therapists or speech/language pathologists) who are interested in becoming leaders, teachers and scholars in their respective fields. This inter-professional program features faculty from the College of Health Sciences and the College of Education. The curriculum’s core has a focus on motor control and motor learning as applied to mobility, rehabilitation, daily functional activities, communication and swallowing in individuals with and without physical or neurologic impairments. In addition to 6 core courses, students will complete research courses, teaching and/or research apprenticeship courses, and at least two electives for a total of at least 51 credit hours.

This program is designed for people who have already completed a master’s degree or entry-level clinical doctorate and wish to advance the body of knowledge of their respective profession and to assume the role of educator and mentor in an academic, clinical or industrial setting.

Requirements for Admission

Five to seven students will be admitted to the Ph.D. program annually, starting with the fall term. Applications for admission are reviewed by the Ph.D. In Kinesiology and Rehabilitation admissions committee. To qualify for admission, an applicant must meet the general University admission requirements at the graduate level as well as specific program requirements including:

1. Completed graduate degree (Master’s or Clinical Doctorate) from a regionally-accredited institution in kinesiology, exercise science, athletic training, occupational therapy, physical therapy, speech and language pathology, or a related field.
2. A minimum grade point average (GPA) of 3.25 on a 4.0 scale for the graduate degree.
3. Graduate Record Exam (GRE) scores of at least 150 each in the verbal and quantitative sections of the test, and at least 4 on the written section.
4. Three letters of reference a least two of which are from former professors familiar with the applicant’s academic performance.
5. English Proficiency Requirement for those whose first language is not English. (See Admissions website)

Enrollment in the program is limited by number of available faculty mentors matching an applicant’s desired area of research. Interested individuals are advised to call the program to find out whether a mentor is available for their research area of interest.

Application Dates

Applications are due by March 1 for students planning to enter in the fall semester, however applications will be accepted until the cohort is full. Applications for financial assistantship should be submitted by May 1 each year.

Degree Requirements

1. Satisfactory completion of at least 51 semester hours of graduate level coursework with a grade point average of 3.0 or higher, including all required courses as listed below. (Students who receive two or more grades of C or one grade of F may not continue in the program).
2. Acceptable performance on written and oral candidacy examinations to be completed at the end of the program of coursework. Students may re-take the candidacy exams only once.
4. Completion of a dissertation representing the candidate’s ability to conduct scholarly, original research.
5. Successful oral defense of the dissertation.

Time frames for completion of degree requirement

1. The entire process from admission to dissertation defense must be completed within eight years. Exceptions to this time limit require the approval of the graduate program director, the department chair, and the college dean.
2. Academic credit which is more than eight years old at the time of graduation must be re-validated by an examination before the work can be applied to a doctoral degree.
3. The dissertation must be completed within five years after the candidacy exams are passed.
4. Dissertations should be defended at least six weeks prior to the end of the semester in which the student expects to graduate.

Each student is required to have a faculty advisor who will meet with the student upon admission to the program. The faculty advisor, with the graduate program director, approves the student’s plan of study and conducts the written and oral competency exams.

Curriculum

Coursework consists of a total of 51 credit hours, including 18 credit hours of core courses, at least 9 credit hours of research courses, 6 credit hours of experiential training/apprenticeships, and 6 credit hours of electives. Each student will also complete 12 credit hours of dissertation research. Up to 12 hours of graduate credit may be transferred from another program to be applied to non-core courses. Transfer of credits is approved at the discretion of the guidance committee and the graduate program director.

Kinesiology and Rehabilitation Core Courses (18 Credit Hours Required)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>KRS 830</td>
<td>Theoretical Models in Kinesiology and Rehabilitation</td>
</tr>
<tr>
<td>KRS 835</td>
<td>Critical Appraisal and Synthesis of Evidence in Kinesiology and Rehabilitation</td>
</tr>
<tr>
<td>KRS 851</td>
<td>Motor Performance: Rhythmic/Cyclic Tasks</td>
</tr>
<tr>
<td>KRS 852</td>
<td>Motor Performance: Discrete Tasks</td>
</tr>
<tr>
<td>KRS 855</td>
<td>Neurosciences of Motor Control</td>
</tr>
<tr>
<td>KRS 857</td>
<td>Motor Learning in Rehabilitation</td>
</tr>
</tbody>
</table>
ATHLETIC TRAINING Courses

AT 602. Foundations of Sports Medicine for Health Care Providers. 3 Credits.
An overview of tissue response to injury and pain transmission provide the foundation from which students will learn about physical agents and specific conditions from a medical perspective. Pathology for specific injuries will be taught, and students will become familiar with the theoretical and practical application of physical agents as it relates to tissue response to injury and pain control. An introduction to the basic principles and underlying theories relating to examination and treatment techniques will also be presented. Prerequisite: Students must be admitted into the Master of Science in Athletic Training degree program.

AT 603. Clinical Examination and Patient Care-Spine & Head. 4 Credits.
This course is designed to provide information relative to the prevention, recognition, evaluation, treatment, rehabilitation, and return to function and/or activity of athletic injuries involving the spine or head. Prerequisite: Students must be admitted into the Master of Science in Athletic Training program.

AT 604. Clinical Examination and Patient Care-Lower Extremity. 4 Credits.
This course is designed to provide information relative to the prevention, recognition, evaluation, treatment, rehabilitation, and return to function and/or activity of athletic injuries involving the lower extremity. Prerequisite: Students must be admitted into the Master of Science of Athletic Training program to register for this course.

AT 605. Clinical Examination and Patient Care-Upper Extremity. 4 Credits.
This course is designed to provide information relative to the prevention, recognition, evaluation, treatment, rehabilitation, and return to function and/or activity of athletic injuries involving the upper extremity. Prerequisites: Students must be admitted into the Master of Science of Athletic Training program to register for this course.

AT 606. Management of Medical Conditions for Healthcare Providers I. 3 Credits.
Instruction and practice in advanced first aid, Emergency Cardiac Care techniques, and oxygen administration for the paramedical professional. A study of the knowledge and skills required to recognize, triage, refer, and treat, as appropriate, internal injuries, general medical conditions, and disabilities of patients involved in physical activity. Prerequisite: Students must be admitted into the Master of Science in Athletic Training program.

AT 612. Functional Movement for Healthcare Providers. 3 Credits.
This course is designed to cover the anatomical and mechanical analysis of human musculoskeletal function. Principles of biomechanics, connective tissue behavior, and muscle physiology are integrated with joint structure and function to form the basis of understanding normal and pathological movement. Prerequisite: AT 691.

AT 615. Research I. 2 Credits.
This course is designed to introduce the graduate student to research processes in the athletic training field. The focus is on understanding and recognizing principles of evidence-based practice in athletic training, understanding the elements of evidence, appraising the evidence, and considering the evidence for use in clinical practice. Prerequisite: Students must be admitted into the Master of Science of Athletic Training program to register for this course.

AT 616. Management of Medical Conditions for Healthcare Providers II. 3 Credits.
Advanced management of acute conditions including wound management, phlebotomy, medication administration, dislocation reduction, and appropriate referral strategies. Advanced therapeutic techniques will also be incorporated. Prerequisite: AT 607.

AT 618. Current Research in Athletic Training. 1 Credit.
Designed to provide an understanding of evidence-based practice to the sports medicine setting and the intricacies of performing evidence-based practice research projects.

AT 623. Athletic Training Practicum I. 1 Credit.
This course is designed to provide practical experience in the athletic training setting and an understanding of evidence-based practice in sports medicine.

AT 625. Research II. 1 Credit.
This course is designed to systematically guide professional athletic training students through the research process. Coursework will focus on development of an original research idea, building the theoretical background, and identifying the rationale for a research project. Based on the nature of this course, students will be required to meet with a research supervisor outside of the time permitted for class. Prerequisites: AT 615.

AT 626. Advanced Orthopaedic Evaluation and Rehabilitation. 4 Credits.
This course is designed for sports medicine clinicians and will focus on advanced topics in the study of orthopaedic evaluation, assessment, management, and rehabilitation of common athletic injuries. A combination of discussion, lecture, critical review of literature, laboratory activities, and student presentations will be employed throughout the course.

AT 628. The Spine: Evaluation and Rehabilitation. 3 Credits.
A course designed to provide information relative to the recognition, evaluation, and treatment of athletic injuries involving the spine.

AT 630. Interprofessional Healthcare in Clinical Practice. 3 Credits.
This clinical experience entails interaction with healthcare providers associated with sports medicine specialties and general medical concerns.

AT 633. Athletic Training Practicum II. 1 Credit.
This course is designed to provide practical experience in the athletic training setting and an understanding of evidence-based practice in sports medicine.
AT 635. Research III. 1 Credit.
This is a course designed to guide professional athletic training students through aspects of the research process. Coursework will focus on writing the Methods sections for a research manuscript, writing the results section for a research manuscript and proper data entry techniques for a research project. Based on the nature of this course, students will be required to meet with a research supervisor and collect data for their respective project outside of the time permitted for class. Prerequisites: AT 615 and AT 625.

AT 638. Documentation & Quality Improvement for Healthcare Providers. 3 Credits.
This course will provide an overview of medical terminology, and best practices in medical documentation will be emphasized. Use of documentation strategies to analyze practice trends to identify and implement quality improvement strategies will be stressed. Prerequisites: Students must be admitted into the Master of Science of Athletic Training program to register for this course.

AT 640. Clinical Medicine for Healthcare Providers I. 3 Credits.
This course introduces the healthcare student to the normal and abnormal physiology of different body systems as well as differential diagnoses in common medical conditions. Factors associated with those body systems that influence examination and intervention will be discussed. Also discussed is when referral to other practitioners is recommended and required. A case study approach is employed to enforce critical thinking and to mimic practical application. Prerequisites: AT 691.

AT 641. Clinical Medicine for Healthcare Providers II. 3 Credits.
This course will address health across the lifespan, as well as highlight strategies to mitigate the risk of long-term health complications. This course will additionally identify and describe various modes of imaging techniques and tests used in medical practice for the neurological, musculoskeletal, cardiovascular, and pulmonary systems. Prerequisites: AT 691 and AT 640.

AT 643. Athletic Training Practicum III. 1 Credit.
This course is designed to provide practical experience in the athletic training setting and an understanding of evidence-based practice in sports medicine.

AT 645. Research IV. 1 Credit.
This course is designed to guide professional athletic training students through aspects of the research process. Coursework will focus on writing the discussion section for a research manuscript, writing a research abstract for submission to a conference, developing an oral research presentation for a conference, and creating a poster presentation for a conference. Based on the nature of this course, students will be required to meet with a research supervisor outside of the time permitted for class. Prerequisites: AT 615, AT 625 and AT 635.

AT 647. Interprofessional Clinical I. 1 Credit.
This clinical experience entails interactions with healthcare providers associated with orthopedic specialties and general medical concerns. Prerequisites: Students must be admitted in the Master of Science of Athletic Training program to register for this course.

AT 648. Interprofessional Clinical II. 1 Credit.
This clinical experience entails interaction with healthcare providers associated with sports medicine specialties and general medical concerns. Prerequisites: Students must be admitted into the Master of Science of Athletic Training program to register for this course.

AT 650. Integration of Evidence for Clinical Decision Making in Sports Medicine. 3 Credits.
This course is designed to introduce the graduate student to research processes in the athletic training field. The focus is on understanding and recognizing principles of EBP in athletic training, understanding the elements of evidence, appraising the evidence, and considering the evidence for use in clinical practice.

AT 651. Statistical Techniques for Clinical Decision Making in Sports Medicine. 3 Credits.
This course includes conceptual and computational applications associated with the common statistical techniques relevant to sports medicine clinicians. The intent is to provide students with an introduction to frequently used descriptive, and inferential statistical methods for clinical or research purposes in sports medicine. Lectures and laboratory exercises will be utilized to instruct students on using statistics to be intelligent consumers of the research literature. Emphasis will be placed on using statistics to make informed, evidence-based clinical decisions with the goal of enhancing patient care. Prerequisite: AT 650.

AT 652. Pharmacology. 3 Credits.
Introduces principles of drug therapy across the lifespan and their use pertaining to the healthcare of the physically active. An emphasis on the application of knowledge and skills required of the healthcare provider, including indications, contraindications, precautions, interactions, documentation, and governing regulations. Prerequisites: AT 691 or other graduate-level human anatomy course as approved by the instructor.

AT 653. Athletic Training Practicum IV. 1 Credit.
This course is designed to provide practical experience in the athletic training setting and an understanding of evidence-based practice in sports medicine.

AT 655. Teaching Strategies and Assessment. 3 Credits.
This course is designed to provide information related to teaching strategies and techniques along with supervised and mentored teaching experiences within fields applicable to athletic training.

AT 657. Lower Extremity Injury Management Strategies. 3 Credits.
Stresses clinical techniques used in the management and assessment of the lower extremity and spine through utilization of evidence-based practice.

AT 661. Behavioral Health in Sports Medicine. 3 Credits.
The focus of this course is on identification, referral, and coordinated treatment options for patients with mental and behavioral health conditions. Prerequisites: Students must be admitted into the Master of Science of Athletic Training program to register for this course.

AT 664. Ethics in Healthcare. 3 Credits.
This course will provide in-depth coverage of legal and ethical concerns for sports medicine healthcare providers. Identification and analysis of applicable local, state, and federal laws and regulations that are specific to the delivery of healthcare. Prerequisites: Students must be admitted into the Master of Science of Athletic Training program to register for this course.

AT 666. Athletic Training Practicum I. 1 Credit.
This course is designed to provide practical experience in the athletic training setting and an understanding of evidence-based practice in sports medicine. Prerequisite: AT 663.

AT 667. Athletic Training Practicum II. 1 Credit.
This course is designed to provide practical experience in the athletic training setting and an understanding of evidence-based practice in sports medicine. Prerequisite: AT 604.

AT 668. Athletic Training Practicum III. 2 Credits.
This course is designed to provide practical experience in the athletic training setting and an understanding of evidence-based practice in sports medicine. Prerequisites: AT 605.

AT 669. Athletic Training Practicum IV. 1 Credit.
This course is designed to provide practical experience in the athletic training setting and an understanding of evidence-based practice in sports medicine. Prerequisites: Students must be admitted into the Master of Science of Athletic Training program to register for this course.

AT 670. Athletic Training Research I. 1 Credit.
This course is designed to systematically guide post-professional athletic training students through the research process. Coursework will focus on development of an original research idea, building the theoretical background, and identifying the rationale for a research project. Based on the nature of this course, students will be required to meet with a research supervisor outside of the time permitted for class. Prerequisite: AT 650.
AT 671. Athletic Training Research II. 2 Credits.
This is a course designed to guide post-professional athletic training students through aspects of the research process. Coursework will focus on writing the Methods sections for a research manuscript, writing the results section for a research manuscript and proper data entry techniques for a research project. Based on the nature of this course, students will be required to meet with a research supervisor and collect data for their respective project outside of the time permitted for class. Prerequisites: AT 670.

AT 672. Athletic Training Research III. 3 Credits.
This course is designed to guide post-professional athletic training students through aspects of the research process. Coursework will focus on writing the discussion section for a research manuscript, writing a research abstract for submission to a conference, developing an oral research presentation for a conference, and creating a poster presentation for a conference. Based on the nature of this course, students will be required to meet with a research supervisor outside of the time permitted for class. Prerequisites: AT 671.

AT 673. Healthcare Administration and Policy. 3 Credits.
An overview of administrative and organizational concepts that relate to healthcare entities that provide athletic training services. Facility design, fiscal management, organizational management, and insurance issues will be emphasized. Students will learn about the development and implementation of policies and procedures that occur within an organization that delivers patient care that can impact delivery and quality of care. Pre- or corequisite: Students must be admitted into the Master of Science of Athletic Training program to register for this course.

AT 686. Performance Enhancement in Sports Medicine. 3 Credits.
A study of the principles and techniques utilized in optimizing physical performance and reducing injury through proper and effective strength and conditioning programs. Special emphasis will be placed on current research findings, breakthrough and advanced weight training techniques, and popular conditioning practices. This course will also provide the student with skills in exercise leadership. The student will learn how to lead resistance training, flexibility training, cardiovascular training involving a variety of exercise modes, and group exercise. Prerequisites: AT 612.

AT 687. Contemporary Issues in Athletic Training. 2 Credits.
Seminar-based course that will involve discussion of critical questions and contemporary issues and problems in athletic training/sports medicine. Prerequisites: Students must be admitted into the Master of Science of Athletic Training program to register for this course.

AT 689. Professional Competence Assessment in Athletic Training. 3 Credits.
Knowledge and skills for successful pursuit of athletic training credentials, including Board Of Certification (BOC) examination preparation, employment, and continuing professional competence. Will include self-analysis of patient encounter portfolio and identification of clinical needs. Prerequisites: Students must be admitted into the Master of Science of Athletic Training program to register for this course.

AT 691. Gross Anatomy for the Rehabilitation Sciences. 6 Credits.
This course will include dissection of a human cadaver and will be supplemented with classroom lectures. The course is designed to teach graduate athletic training students the principles and concepts of human gross anatomy as they apply to clinical practice. Emphasis will be on the musculoskeletal, nervous, and vascular systems of the extremities.

AT 711. Analysis of Human Motion for Sports Medicine Clinicians. 3 Credits.
This course includes theories and applications of techniques concerning the analysis of human motion for the sports medicine clinician. The intent of this course is to provide students with an introduction to quantitative analysis of human motion and the concepts and equipment to collect objective quantifiable data for clinical or research purposes.

AT 756. Education in Athletic Training. 4 Credits.
Designed to introduce current concepts of curriculum development, evaluation methods, course construction and testing as related to the athletic training clinical and didactic experience. Designed to introduce the graduate student to aspects of the management of learning and instruction; how learners learn and how teachers can facilitate their learning as related to the athletic training didactic and clinical experience.

AT 811. Analysis of Human Motion for Sports Medicine Clinicians. 3 Credits.
This course includes theories and applications of techniques concerning the analysis of human motion. It is designed to provide opportunities for the advanced study of motion analysis techniques for the study of human movement. The intent of this course is to provide students with an extensive knowledge concerning quantitative analysis of human motion and the concepts and equipment to collect objective quantifiable data to be used for clinical or research purposes.

AT 998. Master’s Graduate Credit. 1 Credit.
This course is a pass/fail course for master's students in their final semester. It may be taken to fulfill the registration requirement necessary for graduation. All master's students are required to be registered for at least one graduate credit hour in the semester of their graduation.

KINESIOLOGY AND REHABILITATION SCIENCES Courses
KRS 820. MATLAB Programming for Kinesiology and Rehabilitation. 3 Credits.
Developments in technology provide researchers with the ability to measure different aspects of human movement many times a second. To make sense of these large and complex datasets researchers are increasingly using engineering software, e.g., MATLAB, to manipulate, process, and analyze data. In this course, students will gain experience importing, plotting, filtering, selecting critical points, and exporting data through the creation of custom functions and scripts within the MATLAB user interface. Prerequisites: admission to the kinesiology and rehabilitation doctoral program or permission of the instructor.

KRS 830. Theoretical Models in Kinesiology and Rehabilitation. 3 Credits.
This course will explore some of the theories that are common to kinesiology and rehabilitation research. It will include theories associated with disablement, rehabilitation, patient-centered care, motor control, and models for clinical research. These theories will be applied to clinical and research applications relevant to kinesiology and rehabilitation.

KRS 835. Critical Appraisal and Synthesis of Evidence in Kinesiology and Rehabilitation. 3 Credits.
This course will introduce the student to critical appraisal of all forms of research in kinesiology and rehabilitation. The purpose of this course is to further develop the student's competence in conducting and evaluating research. The student will develop the skills necessary to find, critically evaluate, and synthesize the available research in order to answer individual research questions or cultivate a line of research inquiry.

KRS 851. Motor Performance: Rhythmic/Cyclic Tasks. 3 Credits.
This course will examine the coordination of musculoskeletal and neurological systems in performing rhythmic movement tasks such as walking, running, swallowing, singing and feeding. Students will gain experience measuring and interpreting kinematics and kinetics of rhythmic movement tasks integrated with measures of activity and participation and clinical standardized tests.

KRS 852. Motor Performance: Discrete Tasks. 3 Credits.
This course will examine the coordination of musculoskeletal and neurological systems in performing discrete movement tasks such as reaching, grasping, throwing and speaking. Students will gain experience measuring and interpreting kinematics and kinetics of discrete tasks integrated with measures of activity and participation and clinical standardized tests.

KRS 855. Neurosciences of Motor Control. 3 Credits.
This course covers neuroscience with specific regard to the fundamental design, organization and workings of the central nervous system (CNS) in the areas of motor control. The topics cover areas related to the typical development of motor function and changes in motor control throughout the lifespan. This course also assesses motor-control problems that occur as a result of congenital conditions, acquired damage, dysfunction or disease. Pathological conditions such as (but not limited to) stroke, Parkinson's disease, cerebellar disease, and muscle and joint pathologies are examined.
KRS 856. Balance and Postural Control. 3 Credits.
An optimal level of balance and postural control is essential for the performance of many everyday activities. This course is specifically focused on the neural, muscular and biomechanical mechanisms underlying postural control in healthy populations of different ages. In addition, changes that can be observed in postural control following damage, dysfunction and/or disease are also covered. The implications of changes in balance control for falls will be a particular focus. Students in this course learn how to collect and interpret kinematic, kinetic and electrophysiological data associated with the neuromuscular function during posture and balance tasks.

KRS 857. Motor Learning in Rehabilitation. 3 Credits.
This course studies theories and research on the enhancement of motor skills in children and adults, both with and without neurological disorders, as well as the response of nervous and musculoskeletal systems to injuries and different treatments.

KRS 887. Structured Teaching Experience for Kinesiology and Rehabilitation Professions. 1-3 Credits.
This course is designed to provide supervised and mentored teaching experience within fields applicable to kinesiology and rehabilitation.

KRS 895. Special Topics in Kinesiology and Rehabilitation. 3 Credits.
The advanced study of special topics in kinesiology and rehabilitation.

KRS 898. Supervised Research. 1-3 Credits.
This course is designed to provide supervised and mentored research experience within specialized topics applicable to kinesiology and rehabilitation.

KRS 899. Dissertation. 1-12 Credits.
An approved research project written under the supervision of a faculty advisor, in which the student demonstrates the capacity to design and complete independent applied research. The completed project must be approved by the dissertation committee.

PHYSICAL THERAPY Courses

PT 621. Introduction to Physical Therapy. 2 Credits.
Students will be exposed to basic medical terminology, patient management skills involving dressing, positioning, transfers, and gait with assistive devices.

PT 627. Theory and Practice I. 4 Credits.
Several instructional units introduce the student to the basic areas of physical therapy. Units include orientation to the profession, basic safety procedures, physical modalities of heat and cold, electrotherapy, bandaging and sterile technique, and massage.

PT 628. Theory and Practice II. 4 Credits.
Instructional units in this course include introduction of therapeutic exercise approaches for patient types with differing diagnoses. Through critical thinking and problem solving, students learn how to design specific exercise approaches based upon the goals developed for various diagnostic groups. They also learn how to assess the effectiveness, success, and potential risks associated with exercise and develop strategies to modify the treatments based upon those factors.

PT 630. Concepts in Histology for Physical Therapy. 1 Credit.
The emphasis in this course is histology on connective tissue, muscle tissue, tissues of the nervous system as well as the skeletal system. The course is intended to give the physical therapy student a basic understanding of cell structure and function in these major systems. The course integrates with human anatomy and neuroscience.

PT 634. Clinical Sciences I. 3 Credits.
A series of lectures designed to acquaint the student with the clinical areas related to pathological conditions frequently seen in physical therapy practice. The course develops an understanding of the disease processes and guides the student in the application and analysis of pathology in the care of the patient.

PT 635. Clinical Sciences II. 3 Credits.
This course is designed to acquaint the student with medical aspects and pathological conditions associated with musculoskeletal and cardiopulmonary disease and disorders. Subunits also include presentations on cancer, hospice care, and hematological disorders.

PT 638. Exercise Physiology. 2 Credits.
This course provides an overview of human physiology as it relates to exercise and the clinical practice of physical therapy. Energy systems and cardiopulmonary physiology will be covered, including electrocardiogram interpretation, as well as resistance training and weight loss.

PT 640. Patient Evaluation I. 3 Credits.
A beginning course in patient examination skills which focuses on documentation, vital signs and history/interviewing skills. Respiratory and cardiac examination, range of motion, surface anatomy palpation, reflex testing, and vascular status assessment are introduced.

PT 641. Patient Evaluation II. 3 Credits.
A continuation of the study of patient evaluation. The focus of this course is on the musculoskeletal respiratory and cardiovascular systems, and includes examination of posture and gait.

PT 655. Clinical Problem Solving I. 2 Credits.
Use of case discussions, sample patients, and small group experiences to challenge student’s abilities to apply information from class to actual patient problems.

PT 656. Clinical Problem Solving II. 2 Credits.
Use of case discussions, sample patients and small group experience to challenge student's abilities to apply information from spring semester classes to actual patient problems. For this course, the emphasis is on therapeutic exercise, cardiopulmonary rehabilitation, and care of the acutely ill patient.

PT 665. Biomechanics/Kinesiology I. 3 Credits.
This course will review the musculoskeletal system with emphasis on normal movement of the spine and extremities and the coordinated muscle activity necessary to produce that movement. Students will learn manual muscle testing techniques. The course will also introduce basic concepts such as types of muscle contractions, torque production, and joint reaction forces.

PT 666. Biomechanics/Kinesiology II. 2 Credits.
Students will learn to assess the measurement of motion and forces in normal human movement. Trigonometry will be employed in the problem-solving section of the course as the student assesses forces, vectors and loads.

PT 669. Clinical Experience I. 4 Credits.
This first full-time clinical education experience begins at the end of the first academic year of the program and is designed to permit progressive responsibility in patient evaluation and treatment based upon material learned in classes during the first year. Each student is required to provide one in-service presentation during the clinical learning experience.

PT 695. Topics in Physical Therapy. 1-3 Credits.
Advanced study of selected topics.

PT 792. Neuroscience I. 3 Credits.
Neuroscience I is the first in a series of courses that provide the student with an understanding of integrated neuroanatomy and neurophysiology. Emphasis will be placed upon basic neurophysiologic principles at the cellular level. Prerequisites: BIOL 889.

PT 793. Neuroscience II. 3 Credits.
Neuroscience II is the second course in the sequence. From the foundation of Neuroscience I, the course will build to the progressively higher order of structural functional relationships that control behavior. Prerequisites: PT 792 and BIOL 889.

PT 810. Scientific Inquiry I. 3 Credits.
This is the first in a series of courses that prepare the graduate to critically analyze and use scientific literature to improve clinical decision-making and practice. This course introduces the terminology and strategies of evidence-based practice applied to physical therapy. It emphasizes the basic concepts such as research design, measurement principles and basic statistics.
PT 822. Scientific Inquiry II. 2 Credits.
This course is a continuation of the graduate's preparation to practice critical analysis skills related to scientific literature. Its emphasis is placed on knowing the components of research reports and concepts associated with judging the quality and value of research. Students will apply this knowledge to answer clinical questions of diagnosis, prognosis, and intervention.

PT 826. Theory and Practice III. 4 Credits.
A continuation of the important aspects of physical therapy practice. This semester is made up of the following units: spinal cord injury, pediatric neuromotor dysfunction, and adult neurologic dysfunction. The course focuses on treatment procedures including proprioceptive neuromuscular facilitation, current motor control and motor learning concepts, and neurodevelopmental treatment.

PT 827. Theory and Practice IV. 4 Credits.
This course covers advanced and special interest areas of practice such as joint mobilization, sports medicine, special testing equipment, mechanical traction application, and discharge planning for orthopaedic patients.

PT 836. Clinical Sciences III. 3 Credits.
This course continues with the presentation of pathologies and clinical manifestations of selected patient populations. Units within this course include pediatric, adult neurology, and spinal cord injury.

PT 837. Clinical Sciences IV. 3 Credits.
The continuation of a series in clinical areas. Emphasis areas in this course are on radiology, pharmacology, chronic pain, functional capacity evaluation and electrophysiologic testing.

PT 842. Patient Evaluation III. 3 Credits.
This course covers the important evaluative elements associated with the neurological system, including evaluation of adult and pediatric patients with congenital or acquired conditions.

PT 857. Clinical Problem Solving III. 2 Credits.
Student must be a second year PT student enrolled in PT curriculum. Use of case discussions, sample patients, and small group experiences to challenge student's abilities to apply information from class to actual patient problems. For this course, the emphasis is on Neurological and pediatric patients.

PT 858. Clinical Problem Solving IV. 2 Credits.
Use of case discussions, sample patients, and small group experiences to challenge student's abilities to apply information from class to actual patient problems. For this course, the emphasis is on orthopedic patients.

PT 865. Prosthetics and Orthotics. 3 Credits.
This course addresses the examination, assessment and fabrication issues associated with the development of prosthetics and orthotics for selected patient populations. Prerequisites: PT 665 and PT 666.

PT 871. Clinical Experience II. 4 Credits.
The student is provided an 8-week opportunity to apply academic philosophy, theory, and practices during a period of clinical education. This clinical experience or PT 872 will consist of a rehabilitation experience (pediatric or adult neurology). The student will be required to collect data for a research case study during this clinical experience or PT 872.

PT 872. Clinical Experience III. 4 Credits.
The student is provided an 8-week opportunity to apply academic philosophy, theory, and practices during a period of clinical education. This clinical experience or PT 871 will consist of a rehabilitation experience (pediatric or adult neurology). The student will be required to collect data for a research case study during this clinical experience or PT 871.

PT 873. Clinical Experience IV. 4 Credits.
Students spend eight weeks at different facilities in a full-time clinical experience. This course provides an opportunity to develop on-site innovative clinical investigations with program and clinical faculty coordination/supervision.

PT 874. Clinical Experience V. 4 Credits.
A final clinical experience for physical therapy students. Students spend eight weeks at different facilities in a full-time clinical experience. This course provides an opportunity to develop on-site innovative clinical investigations with program and clinical faculty coordination/supervision.

PT 880. Psychosocial Aspects of Patient Care. 2 Credits.
This course focuses upon the emotional and psychological elements associated with illness and disease. Students will learn the various societal and personal views of sickness and chronic illness as well as the coping mechanism employed by individuals and families when facing disease and terminal illness.

PT 881. Inter-Professional Case Management for Special Populations. 3 Credits.
This hybrid course combines in-class lectures with online discussion boards and collaborations with other health professions students. The student will learn to work with other health professionals to coordinate care in people dealing with the effects of aging and age-related movement problems, dementia, osteoporosis, breast and prostate cancer, sexuality, nutrition, and pelvic floor function.

PT 882. Practice Management. 3 Credits.
This course is designed to provide the physical therapy student with a review of the principles and practices of managing and administering physical therapy in various clinical settings. The course stresses the principles of management administration in patient care in clinical environments.

PT 883. Professional Issues in Physical Therapy. 2 Credits.
This course is for the identification, analysis, and discussion of issues currently facing the physical therapy profession. The issues focus on the ethical questions as well as the role relationships of physical therapists in the greater health care delivery system of the United States.

PT 884. Clinical Teaching and Professional Communication. 3 Credits.
This course is designed to meet the needs for patient instruction, education within the classroom and clinic, and peer continuing education. The focus of the course is on clear communication in the teaching/learning process.

PT 890. Differential Diagnosis Seminar. 3 Credits.
The focus of this seminar is on the integration of the student’s knowledge in the areas of the foundation and clinical sciences through the application of problem solving in differential diagnosis.

PT 891. Seminar in Integrative Case Reports. 3 Credits.
This course provides the faculty and students the forum to present clinical case studies. The students will have collected the data for their individual case presentations during the previous summer internships.

PT 892. Seminar in Inter-Professional Practice. 1 Credit.
The purpose of this course is to challenge the student to interact with other health professionals in making patient care decisions.

PT 893. Research Topics. 2 Credits.
Research topics.

PT 895. Topics in Physical Therapy I. 1 Credit.
This course will expose interprofessional students to current trends in health promotion and illness prevention. Topics will include: Healthy People 2020 objectives, age specific clinical guidelines for health promotion and illness prevention, theories on behavior and motivation, sociocultural issues, and screening for a variety of health problems. Measures for promoting and maintaining health throughout the lifespan will be explored with attention to current research from the literature.

PT 896. Topics in Physical Therapy II. 1 Credit.
Students will pick from a variety of clinical specialty practice, service learning or research topics to explore in a small group setting.