Physical Rehabilitation Science, Ph.D.

Through course work and participation in research, the Doctor of Philosophy program in physical rehabilitation science emphasizes the development of an individual's expertise as a researcher in rehabilitation science. Approximately 20 students are enrolled in the Ph.D. program each year.

Requirements

The Doctor of Philosophy with a major in physical rehabilitation science requires a minimum of 72 s.h. of graduate credit. The program is designed to advance a student's ability to independently develop and carry out research that establishes the scientific basis for prevention, evaluation, and treatment of impairments, functional limitations, and disability. The curriculum is flexible enough to accommodate research focusing on basic, applied, or clinical studies in the rehabilitation sciences. Students have access to the program's research laboratories (see Facilities in this section of the Catalog).

Graduates who complete the program are prepared for academic appointments that emphasize research, scholarship, and teaching. They possess:

- theoretical and scientific knowledge to perform basic, applied, or clinical-level original research that leads to scientific presentations, publication in peer-reviewed journals, and competition for extramural funding through scientific grant writing;
- breadth of knowledge in exercise physiology, biomechanics, neuroscience, or motor control specialty areas as they relate to impairment, functional limitation, and disability; and
- theoretical and practical skills required for college or university teaching at the professional entry and advanced graduate levels.

Curriculum

Students and their faculty advisor develop an individualized study plan. A preliminary study plan is developed within the first 9 s.h. of graduate study; a final plan is submitted to the Graduate College when the Ph.D. comprehensive examination is scheduled.

To ensure breadth of knowledge, all students complete specific core, research, and scientific specialty area content courses. Elective courses are selected to provide in-depth study of the specialty; they are complemented by an advanced seminar course specific to a student's specialty and taken in preparation for the comprehensive examination.

Students must satisfactorily complete the comprehensive examination, which is taken after all required course work is completed. Doctoral study culminates with 12 s.h. of thesis research and an oral examination.

General Core Requirement

Ph.D. students must complete the following core requirements. In addition to the courses below, the Collaborative Institutional Training Initiative (CITI)—online, web-based training—must be completed before a student enrolls in BMED:7270 Scholarly Integrity/Responsible Conduct of Research I and BMED:7271 Scholarly Integrity/Responsible Conduct of Research II.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PTRS:7812</td>
<td>Biomedical Instrumentation and Measurement</td>
<td>3</td>
</tr>
<tr>
<td>PTRS:7820</td>
<td>Seminar in Rehabilitation Science (taken twice)</td>
<td>1</td>
</tr>
<tr>
<td>PTRS:7826</td>
<td>Scientific Writing in Rehabilitation Science</td>
<td>3</td>
</tr>
<tr>
<td>PTRS:7880</td>
<td>Teaching Practicum</td>
<td>arr.</td>
</tr>
<tr>
<td>BMED:7270</td>
<td>Scholarly Integrity/Responsible Conduct of Research I</td>
<td>0</td>
</tr>
<tr>
<td>BMED:7271</td>
<td>Scholarly Integrity/Responsible Conduct of Research II</td>
<td>0</td>
</tr>
<tr>
<td>PSQF:7385</td>
<td>Teaching and Learning in Higher Education</td>
<td>3</td>
</tr>
<tr>
<td>BIOS:4120</td>
<td>Introduction to Biostatistics</td>
<td>3</td>
</tr>
<tr>
<td>STAT:4143</td>
<td>Introduction to Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>BIOS:5120</td>
<td>Regression Modeling and ANOVA in the Health Sciences</td>
<td>3</td>
</tr>
<tr>
<td>STAT:5610</td>
<td>Regression Modeling and ANOVA in the Health Sciences</td>
<td>3</td>
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Research Requirement

Students complete at least 24 s.h. from the following. The capstone course PTRS:7900 Rehabilitation Research Capstone Project is recommended but not required for students who enter the program with a master's or doctoral-level degree; however, it is required for students who enter with a bachelor's degree.

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>PTRS:7884</td>
<td>Practicum in Research</td>
<td>arr.</td>
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<tr>
<td>PTRS:7895</td>
<td>Advanced Seminar in Rehabilitation Science</td>
<td>arr.</td>
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<tr>
<td>PTRS:7900</td>
<td>Rehabilitation Research Capstone Project</td>
<td>arr.</td>
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<tr>
<td>PTRS:7927</td>
<td>Research in Rehabilitation Science</td>
<td>arr.</td>
</tr>
<tr>
<td>PTRS:7931</td>
<td>Critical Thinking in Pain</td>
<td>arr.</td>
</tr>
<tr>
<td>PTRS:7932</td>
<td>Critical Thinking in Biomechanics and Human Performance Assessment</td>
<td>arr.</td>
</tr>
<tr>
<td>PTRS:7933</td>
<td>Critical Thinking in Movement Control/Human Performance</td>
<td>arr.</td>
</tr>
<tr>
<td>PTRS:7934</td>
<td>Critical Thinking in Neural Plasticity</td>
<td>arr.</td>
</tr>
<tr>
<td>PTRS:7936</td>
<td>Critical Thinking in Cardiovascular Physiology</td>
<td>arr.</td>
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</table>
Specialty Content Requirement

Students must complete at least 9 s.h. in their scientific specialty area. Students may choose courses from the following list, but other courses suited to a student’s background knowledge and interest area are considered.

Anatomy and Cell Biology
ACB:8401 Advanced Human Anatomy  arr.

Epidemiology
EPID:6900 Design of Intervention and Clinical Trials  3

Health and Human Physiology
HHP:6130 Advanced Skeletal Muscle Physiology  1,3
HHP:6150 Advanced Clinical Exercise Physiology  1,3
HHP:6300 Motor Control Seminar  1
HHP:6410 Advanced Exercise Physiology  1,3
HHP:6460 Advanced Cardiovascular Physiology  1,3
HHP:6470 Advanced Physiology of Aging  1,3
HHP:6480 Advanced Human Pharmacology  1,3

Neuroscience
NSCI:7235 Neurobiology of Disease  3

Nursing
NURS:3460 Professional Role II: Research  3

Occupational and Environmental Health
OEH:4310 Occupational Ergonomics: Principles  3
OEH:6310 Occupational Ergonomics: Applications  3

Pharmacology
PCOL:5137 Neurotransmitters  1
PCOL:6035 Topics in Pain and Analgesia  1
PCOL:6207 Ion Channel Pharmacology  1
PCOL:6250 Advanced Problem Solving in Pharmacological Sciences  1

Physical Therapy
PTRS:5210 Kinesiology and Pathomechanics  4
PTRS:6224 Activity-Based Neural and Musculoskeletal Plasticity in Health Care  4
PTRS:6250 Critical Inquiry: Evidence-Based Practice  2
PTRS:6253 Functional Neuroanatomy  arr.
PTRS:7875 Analysis of Activity-Based Neural and Musculoskeletal Plasticity  3
PTRS:7885 Biomechanical Analysis in Rehabilitation  3
PTRS:7899 Introduction to Pain: Overview of Theories, Concepts, and Mechanisms  1

PTRS:7901 Clinical Correlates of Pain: Syndromes and Management  1
PTRS:7902 Molecular, Cellular, and Neural Mechanisms of Pain  2
PTRS:7903 Rehabilitation Management of Pain  1

Admission

Applicants must meet the admission requirements of the Graduate College; see the Manual of Rules and Regulations of the Graduate College. They should have a cumulative g.p.a. of at least 3.00 and scores at or above the 50th percentile for each section of the Graduate Record Exam (GRE) General Test. A minimum of two years of clinical experience may be considered highly desirable, depending on the research interest area.

Applicants whose first language is not English must score at least 100 (Internet-based) on the Test of English as a Foreign Language (TOEFL).

Application materials must include a complete Graduate College application form, test scores, transcripts, three letters of recommendation, and a statement of purpose. Personal interviews are required of all applicants selected for consideration by the admissions committee. On-campus interviews are preferred, but telephone interviews may be substituted when necessary.

Application deadlines are October 15 for spring semester entry (notification by December 15); March 15 for summer entry (notification by May 15); and May 15 for fall semester entry (notification by July 15).

Financial Support

A number of assistantships are available for Ph.D. students. Faculty advisors provide guidance for students seeking external scholarship support through foundations and federal programs that support Ph.D. training.

Career Advancement

The Ph.D. program trains students to obtain positions as professors and researchers in rehabilitation science.